

DEPARTMENT OF THE INTERIOR

ANNUAL REPORT

OF THE

TOPOGRAPHICAL SURVEYS  
BRANCH

1907-1908

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1909

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# REPORT

## OF THE

# SURVEYOR GENERAL OF DOMINION LANDS

### 1907-1908

DEPARTMENT OF THE INTERIOR,  
TOPOGRAPHICAL SURVEYS BRANCH,  
OTTAWA, August 31, 1908.

The Deputy Minister of the Interior,  
Ottawa.

SIR,—I have the honour to submit the following report on the operations of the Topographical Surveys Branch for the fiscal year ended March 31, 1908.

In what was formerly called the fertile belt, that is to say the country lying south of the North Saskatchewan river, the subdivision surveys are practically completed; in fact they extended for some distance north of the river. The homesteads within this area are being rapidly taken up and the newcomers will soon have to look elsewhere for free lands. What direction settlement will take cannot be foreseen with accuracy; it will depend not only upon climatic and soil conditions as yet imperfectly known, but also upon other considerations such as the opening of communications, building of railroads, &c. The department must be prepared to meet the demand for surveys wherever it arises and for this purpose the initial meridians and base lines have to be located over a very large extent of country. These lines governing all subsequent operations, have to be established with the greatest care and accuracy. The difficulties of transportation are enormous. The lines run through dense woods and the extensive marshes peculiar to the northern country are a great impediment. The progress of the work is slow and as a result the cost is very great. The figures which are given in appendix No. 2 show that it varies from \$79 to \$218 per mile, and averages \$140.

Incidentally it may be mentioned that these surveys are a source of wonder to the inhabitants of the outlying settlements. They cannot understand why survey parties are sent out hundreds of miles away in the wilderness while the settlers are waiting for the subdivision of their lands; the only explanation which occurs to them is that there is gross ignorance at Ottawa of the needs of the West. There is, however no other way of extending the surveys; the benefits of our splendid system of township subdivision are the direct result of these outlying operations.

In comparing items in this report with those in the report for the fiscal year ended March 31, 1907, it is to be noted that in some cases the latter covered a period of nine and in some cases fifteen months, owing to the change then made in the date of the beginning of the fiscal year; in the present report all items are given for a period of twelve months only.



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## SURVEYS FOR THE YEAR ENDED MARCH 31, 1908.

The spring of 1907 was very backward and the summer unusually wet, which had the effect of greatly retarding survey operations. The sloughs, creeks and rivers were filled with water, rendering the task of moving an outfit a very difficult one especially in the case of the surveyors paid by the day, who have often long distances to travel from one survey to another. On account of the frequent rains and continuous cloudy weather much difficulty was also experienced in making the necessary observations to determine the astronomical bearings of lines surveyed.

Another cause of trouble to surveyors in charge of parties was the difficulty of retaining the services of good men on their parties under such unfavourable conditions. Owing to the scarcity of feed for horses some surveyors were compelled to close operations much earlier than usual.

The result has been that the amount of survey work done during the year was not as great as estimated at the beginning of the season. The average amount of survey per party, however, compares well with those of previous years.

During the year the complete subdivision was made of two hundred and twenty-three whole and of eighteen fractional townships, while a partial subdivision was made of one hundred and twenty-six other townships. In addition to this a complete resurvey was made of thirty-two whole townships and of one fractional, as well as a partial resurvey of one hundred and thirty-one others.

Sixty-three survey parties were employed, fifty-seven of which were engaged on township work and six on miscellaneous surveys. Of these parties thirty-three were paid by the day while thirty worked under contract.

Of the parties under daily pay, six were employed in Manitoba, four in Saskatchewan, thirteen in Alberta, six in British Columbia, one on the boundary between British Columbia and Yukon Territory and one in the Northwest Territory, while two others were part of the time in one province and part in another. Five of the parties working under contract were located in Manitoba, ten in Saskatchewan and twelve in Alberta, while three were part of the time in one province and part in another.

Five of the parties under daily pay, in charge of Messrs. P. R. A. Belanger, E. W. Hubbell, G. J. Lonergan, Geo. McMillan and C. F. Miles were for the greater part of the season employed in inspecting surveys made under contract, thirty-four of which were examined during the year. In addition to inspection these parties investigated errors reported in survey, and where necessary made corrections. The errors reported in almost every case existed in surveys made years ago when the methods employed were not of a nature to produce the accuracy attained under our present methods.

## TOWNSHIP SURVEYS.

The reports of the surveyors working under daily pay are given as appendices No 13 to No. 43. These convey, though inadequately, some idea of the methods of carrying on surveys and the dangers and difficulties encountered.

Mr. Johnson in his report says, 'To those who have packed steadily for a month over high mountains any description is superfluous, and, to those who have not, no words of mine could make them realize what it is like.'

The field of survey operations extended from the eastern boundary of Manitoba to the western boundary of Alberta, and in the railway belt as far west as the Pacific ocean. It also extended from the international boundary as far north as the twenty-second base line, about 500 miles.

Mr. C. F. Aylsworth, D.L.S., who was employed on resurvey work in eastern Manitoba, reports that the country around Beauséjour is not very thickly settled, as the land is partly boggy and in many places very stony. A great many large ditches have recently been dug which render land, formerly flooded, now fit for cultivation.



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Mr. B. J. Saunders, D.L.S., was engaged on surveys of block outlines in eastern Manitoba in the vicinity of Fort Alexander. This settlement which is an old Hudson's Bay trading post is very prosperous and is well equipped with schools, churches, saw-mills, &c. The Indians of the adjoining reserve are very industrious and find employment in fishing, cutting cord-wood and railway ties, and other similar work.

About thirty miles north of Fort Alexander there is a gold prospect which has made but little progress owing to lack of capital. During the past winter an iron ore location was being worked on Black island at the mouth of Manigotagan river.

Mr. C. E. Bourgault, D.L.S., was employed on survey work around the south end of lake Manitoba. He also did some resurvey near the town of Sewell, and retraced the colonization road north from Teulon.

Base line work in central Manitoba was done by Mr. W. Christie, D.L.S.

Mr. W. J. Deans, D.L.S., made some correction and retracement surveys along the second meridian. He remarks on the phenomenal growth of the town of Yorkton since his former visit there in 1899. The surrounding country contains several well cultivated farms, while the farmhouses are fitted up with many modern conveniences.

Mr. W. R. Reilly, D.L.S., made some surveys along the Saskatchewan river near the fourth meridian. The soil is good for growing wheat, but early frosts are apt to do some damage occasionally. Mr. Reilly advocates mixed farming as being more profitable, for if the wheat be damaged the farmer has something to fall back on.

Mr. David Beatty, D.L.S., resurveyed some townships in eastern Alberta about one hundred and fifty miles north of Medicine Hat. He speaks of the generally good quality of the soil, but reports a scarcity of good water.

Mr. L. E. Fontaine, D.L.S., was engaged in making a traverse and taking levels of Milk river along its course through Canadian territory.

Mr. T. A. Davies, D.L.S., was employed on retracement and correction surveys in central Alberta.

Mr. C. C. Smith, D.L.S., made some subdivision and resurveys in southern Alberta west of Macleod. This is the great ranching country of the West, but it is fast being fenced up into farms. The land is good and easily worked. Timber for fuel and building purposes can be easily obtained in Porcupine hills, and all conditions tend to make the district very desirable for homesteading.

Mr. W. F. O'Hara, D.L.S., who was working in the Pincher Creek district, reports the existence of a large oil-field, the development of which is yet in its initial stage, although the companies operating there have met with very encouraging results. From tests which have been made the petroleum is said to be of the highest grade.

Mr. W. T. Green, D.L.S., was working in the foothills south of Calgary. He speaks of the extraordinary growth of the town of Claresholm. Five years ago this place could boast of only a station-house, while to-day it is a thriving centre of industry. The surrounding country consists of the best of land, well watered, and suitable for either farming or ranching.

Base line surveys west of the fifth meridian were performed by Messrs. A. H. Hawkins, D.L.S., and Geo. Ross, D.L.S. Mr. Hawkins produced the thirteenth base and Mr. Ross the fourteenth.

Mr. A. Saint Cyr, D.L.S., ran the sixth meridian south from the sixteenth base line to Bullrush mountains. Some idea of the difficulties encountered by surveyors may be obtained from a perusal of his report. He was forced to travel from Edmonton around by Lesser Slave lake in order to reach his destination, as the snow was too deep and feed too scarce to travel directly west to the sixth meridian. As the snow had not yet melted in the bush and the ice along the route was in a treacherous condition it was necessary for him to carry both sleds and wagons in his outfit. To add to the difficulties of his journey some of the ferry boats had been swept away by the high spring floods, which rendered fording the rivers difficult and dangerous. Bad



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trails up steep hills often covered by fallen trees to a height of several feet also retarded his progress considerably.

Mr. J. B. Saint Cyr, D.L.S., was employed on subdivision and settlement surveys around Dunvegan and Peace River crossing. The fact that surveys are required so far north goes to prove the extensive settlement of the west. The soil in the Peace River district is of the best quality and the oats and wheat grown are of the highest grade. Timber for fuel and building purposes is easily obtained and the district bids fair to become one of the most prosperous in the west.

Mr. A. W. Ponton, D.L.S., was engaged on the production of the fifth meridian from the twentieth to the twenty-second base line.

Surveys required around the west end of Lesser Slave lake were performed by Mr. H. W. Selby, D.L.S. This district being so far north is generally considered to be subject to summer frosts, but Mr. Selby reports that very little damage was done by frost there last year, although much damage was done in other districts of the west farther south. The great drawback to the settlement of the country is the lack of railroad transportation.

#### BRITISH COLUMBIA SURVEYS.

During the season of 1907, three regular parties were employed on numerous scattered surveys within the railway belt of British Columbia. In all, 530 miles of line were run, generally in very rough country. On this work Mr. J. E. Ross, D.L.S., spent nearly eleven months, and Mr. A. G. Stacey, D.L.S., eight months, while Mr. A. W. Johnson, D.L.S., took the field early in March and returned in August. The details of these surveys will be found in the reports of the surveyors and elsewhere in this volume. The excessive amount of field work does not leave to these surveyors much time for the completion of their returns, and it is probable that at least one more party will be required during the coming season. Mr. Ross was engaged on survey work east of Kamloops, while Mr. Stacey was employed on surveys west of Kamloops. This city is the distributing centre for the north Thompson district and is a place of considerable activity. It operates its own electric lighting plant and waterworks system and has the provincial asylum and hospital located there. The town of Ashcroft is situated about forty miles west of Kamloops. All traffic for the northern interior passes through this place, and great freight wagons, drawn by four or five teams, and a well-equipped stage travel two hundred and fifty miles north.

Vegetation in the Kamloops district is several weeks ahead of that in Ontario, and where irrigation is employed the soil proves very productive. Fruit raising is a very important and growing industry, and of late years exhibits from this district have carried off the highest awards at international exhibitions on both sides of the Atlantic.

Mr. Johnson made some surveys in the railway belt between Yale and Port Moody.

#### MISCELLANEOUS SURVEYS.

Mr. P. A. Carson, D.L.S., continued the triangulation in the railway belt north-east from Beavermouth.

Mr. A. O. Wheeler, D.L.S., made a photographic survey of the railway belt in the Dogtooth and Selkirk mountains for mapping purposes.

Mr. Lewis Bolton, D.L.S., was engaged in settlement surveys around The Pas and Cormorant lake

Mr. W. Thibaudeau, C.E., made a preliminary investigation of the water-power on the Winnipeg river from the eastern boundary of Manitoba to lake Winnipeg. In this district there is a large amount of spruce and poplar suitable for the manufacture of pulp and the falls along Winnipeg river furnish an unlimited amount of



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power for the development of the pulpwood industry. Little was known of the value of this water-power except by some companies in Winnipeg who secured sites along the river, built a control dam at Kenora to regulate the flow of water in the river, established generating stations and supplied power to the city of Winnipeg at a very small cost. It was accordingly deemed advisable to ascertain the available water-power on this river and Mr. Thibaudeau was sent to investigate it. Comparing the water-power on the Winnipeg river with that on the Niagara the former is about forty-three per cent of that available on the Canadian or Horseshoe falls, but it is more advantageous on Winnipeg river as it is distributed over a very large area.

Mr. J. N. Wallace, D.L.S., ran part of the boundary between British Columbia and Yukon Territory in the neighbourhood of the Dalton trail.

The country along the line of the Grand Trunk Pacific railway west of the subdivided townships was explored by Mr. P. G. Stewart. He travelled through twenty-six townships between ranges 7 and 16, and townships 51 and 57 west of the fifth meridian. The country generally is rolling, partly opened and partly timbered with poplar, spruce and jackpine. On the hills the land is sandy, while in the valleys it is clay loam. The hills range as high as three hundred feet, while the valleys generally are about six hundred feet wide. Some of the valleys along the larger streams, such as the McLeod river, are about half a mile wide. Mr. Stewart estimates the amount of timber in the townships explored at between two hundred and thirty and two hundred and forty million feet.

The following is a comparison of the mileage surveyed since 1905:—

	April 1, 1907, to Mar. 31, 1908.	Jan. 1, 1906, to Mar. 31, 1907.	Jan. 1, 1905, to Dec. 31, 1905.
	Miles.	Miles.	Miles.
Township outlines.....	1,674	1,306	1,591
Section lines.....	13,710	8,962	10,544
Traverse.....	3,193	1,848	1,809
Resurvey.....	2,917	4,948	2,579
Total for season.....	21,494	17,064	16,523
Number of parties.....	59	56	46
Average miles per party .....	364	305	359

The following table shows the mileage surveyed by the parties under daily pay and by the parties under contract:—

Work of parties under daily pay.

	April 1, 1907, to Mar. 31, 1908.	Jan. 1, 1906, to Mar. 31, 1907.	Jan. 1, 1905, to Dec. 31, 1905.
	Miles.	Miles.	Miles.
Township outlines.....	542	756	1,008
Section lines.....	975	1,035	939
Traverse .....	1,313	643	421
Resurvey.....	2,782	4,815	2,499
Total for season.....	5,612	7,249	4,867
Number of parties.....	29	29	26
Average miles per party.....	194	250	187



Work of parties under contract.

	April 1, 1907, to Mar. 31, 1908.	Jan. 1, 1906, to Mar. 31, 1907.	Jan. 1, 1905, to Dec. 31, 1905.
	Miles.	Miles.	Miles.
Township outlines.....	1,132	550	583
Section lines.....	12,735	7,927	9,605
Traverse .....	1,880	1,205	1,388
Resurvey .....	135	133	80
Total for season.....	15,882	9,815	11,656
Number of parties.....	30	27	20
Average miles per party ...	529	364	583

NOTE.—Owing to the nature of their work, the parties under Messrs. P. A. Carson, P. G. Stewart, W. Thibaudeau and A. O. Wheeler are not included in the statement of mileage for the year ended March 31, 1908.

The following statement shows the average cost per mile of surveys done by contractors and by surveyors under daily pay for the year ended March 31, 1908:—

	Surveys made under day pay.	Surveys made by contract.
Total mileage surveyed.. . . .	5,612	15,882
Total cost.. . . .	\$247,220 96	\$336,230 08
Average cost per mile.. . . .	\$44 05	\$21 18

DESCRIPTIONS OF TOWNSHIPS.

Descriptions of the townships subdivided have been compiled from the surveyors' reports received during the year ended March 31, 1908. They are given as Appendix No. 44. The townships are put in order of township, range and meridian, and the descriptions are preceded by a list of all townships described.

A map accompanying this report shows all the townships in the provinces of Manitoba, Saskatchewan and Alberta subdivided prior to April 1, 1907, coloured in buff, those subdivided between April 1, 1907, and March 31, 1908, are shown in green, while those resurveyed during the same period are shown in red.

REMUNERATION OF SURVEYORS.

At the inception of the survey of Dominion lands, nearly forty years ago, Dominion land surveyors were paid five dollars per day. Shortly after six dollars per day was allowed to surveyors of base lines. These rates remained in force until 1901, when they were increased to \$6.50 and \$7.50, respectively. The advance proved inadequate; in order to induce properly educated men to qualify as Dominion land surveyors, so that there should be no difficulty in securing the services of competent surveyors when they are wanted, a further increase to \$8 and \$10, respectively, was granted by Order-in-Council of March 30, 1908. The increase, it will be observed, is for ordinary surveyors 60 per cent over the rate of forty years ago; for surveyors of base lines it is a little over 60 per cent. Considering the enhanced cost of everything, the increase does not appear too large. By the same Order-in-Council the salary of the inspectors of surveys was fixed at \$9 per day in the field and \$5 per day at office work.



## SESSIONAL PAPER No. 25b

## RESERVATION FOR ROADS.

The system of survey of Dominion lands provides road allowances along section lines. When a section line strikes a lake, the cut banks of a river or other obstacle, the road has to be located elsewhere. The location of these deviations is placed under the control of the provinces by the Manitoba Supplementary Provisions Act and the Saskatchewan and Alberta Roads Act. It was represented that the establishment of these deviations involved great expenditure, and that a considerable part of this expenditure consisted in payments for the land to homesteaders and others who, although directly benefited by the new road, frequently exacted a large price for land which they had just acquired for nothing or at a small price. This difficulty was adjusted by Order-in-Council of November 20, 1907, which directs that every homestead entry shall be granted and every lease or sale of Dominion lands made subject to the right of the province to take, without compensation, such land as may be required for road purposes, not exceeding  $2\frac{1}{2}$  per cent of the area of such Dominion lands.

## STAR DIAGRAMS FOR LATITUDE OBSERVATIONS.

In extending the principal meridians and the base lines, surveyors have to observe the latitude from time to time for the purpose of checking their measurements and detecting accidental errors. The most convenient and precise method of observation for this purpose is known as Talcott's method, and consists in measuring differences of stars' zenith distances. The new model of transit theodolite for base lines has been especially designed to make use of this method. The most tedious part of a latitude observation by Talcott's method is the preparation of the observing list, especially when several star catalogues have to be consulted. To facilitate the preparation of these observing lists and save the surveyor's time, star charts have now been compiled. By the use of these charts an observing list of stars for the hours of darkness may be prepared in a very short time. These charts give the mean places of all stars up to and including the fifth magnitude listed in the Berliner Jahrbuch, Greenwich Ten Years' Catalogue of Stars for 1890 and Ambronn's Sternverzeichnis for 1900. Stars smaller than fifth magnitude are not visible with the telescope of the base line transit theodolite. The charts are in four sets of six hours' right ascension each, as follows: No. 1, 0 to 6 hours; No. 2, 6 to 12 hours; No. 3, 12 to 18 hours; No. 4, 18 to 24 hours. Each set consists of two sheets, an upper and a lower, each 16 inches by  $19\frac{1}{2}$  inches, the lower sheet of thick opaque paper printed in black and the upper sheet of thin transparent paper printed in red. Each sheet is ruled in sections, the arguments being the star's declination for the horizontal lines and right ascension for vertical lines.

As the sections are roughly one-half inch in declination by three-eighths of an inch in right ascension, interpolation by the eye to the nearest ten minutes in declination and the nearest two minutes of time in right ascension is quite easy. On the lower sheet the mean places of stars from  $5^{\circ}$  south declination to  $65^{\circ}$  north declination are plotted in their correct positions, the declinations increasing from bottom to top. On the upper sheet are plotted stars from  $45^{\circ}$  north declination to  $90^{\circ}$  with the lower transits of stars from  $65^{\circ}$  north to  $90^{\circ}$ , the declinations increasing from top to bottom. The right ascensions increase the same from left to right on upper and lower sheets. One symbol is used for stars from 0.0 to 1.0 magnitude, another for stars from 1.1 to 2.0 and so on a different symbol being used for every magnitude. This is of great assistance in quickly identifying the star when afterwards looking for it among the different star catalogues. If now the transparent or upper sheet is placed on the opaque or lower sheet so that the horizontal lines of the upper sheet for that particular declination which is equal to the latitude is directly over the same line of declination through its whole length on the lower sheet, all stars on the upper and lower sheets on the same horizontal lines have the same zenith distance north and south from the observation spot, the black symbols showing through from the lower



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sheet representing stars of south zenith distance and the red of upper sheet stars of north zenith distance. The vertical lines show the times of transit of the several stars. Hence the working methods:—The approximate latitude of the observation spot and the hours of right ascension during which it is desired to observe being known, those sets are selected which include the desired hours of right ascension. Place the upper sheet of each set on the lower with the vertical or right ascension lines corresponding and bring into coincidence the horizontal or declination line of both sheets for that particular declination which is equal to the latitude. Then select those pairs of south and north zenith stars within the limits of right ascension desired whose zenith distance is not too great, whose difference of zenith distance is no more than one-half the run of the micrometer and which have a suitable interval between transits. Having taken out the stars for limits of time allowed, there will probably be found long intervals in places between different pairs. These may be filled in by extending the limit allowed for the difference of zenith distance to the full run of the micrometer. The pairs having thus been selected, the stars are identified in the several catalogues, and their mean places in right ascension and declination are deduced from the epoch of the star catalogue to the beginning of the year which is sufficiently close for the purposes of the observing list.

CORRESPONDENCE.

The correspondence consisted of :

Letters received.. . . . .	10,092
Letters sent.. . . . .	12,942

The staff consists of the secretary, one clerk, four stenographers and typewriters and two messengers.

ACCOUNTS.

The accountant's record shows :

Number of accounts dealt with.. . . . .	633
Amount of accounts.. . . . .	\$766,000
Number of cheques forwarded.. . . . .	3,051

The staff consists of an accountant and an assistant accountant.

OFFICE STAFF.

A list of the office staff of the Topographical Surveys Branch at Ottawa is given as Appendix No. 10.

Many changes have taken place during the year. In the Metcalfe street office Mr. F. Lynch has been added to the secretary's staff and Mr. A. Paquette has been appointed messenger in place of Mr. J. J. O'Leary, who was transferred to the School Lands Branch. Messrs. A. G. Stacey, H. L. Seymour, C. C. Fitzgerald, M. Kimpe, E. H. Phillips, J. M. Empey, R. B. Owens, J. N. Goodall, R. V. Heathcott, J. W. Rochon, F. L. Marriott, H. J. Smith, J. C. Ball and S. H. Shore have resigned. Messrs. F. G. D. Durnford and E. E. Brice have been transferred to the Lands Patent Branch and Messrs J. M. Mudie and W. C. Gillis to the survey records office. Mr. Gillis was appointed to the Metcalfe street office during the year, as were also Messrs. A. Vickery, H. P. Moulton and N. Bawlf all three of whom subsequently resigned. Miss A. Whitehead was employed for a short time during the year as extra typewriter. Messrs. F. W. Rice, A. L. Cumming, W. L. MacIlquham, E. M. Dennis and G. B. Dodge have been absent part of the time acting temporarily as assistants to surveyors, while Messrs. W. T. Green, D.L.S., P. A. Carson, D.L.S., and T. A. Davies, D.L.S., have also been absent part of the time in charge of survey parties in the field.



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The additions to the staff during the year are as follows: In the Metcalfe street office, Messrs. A. D. McRae, A. G. Stewart, A. W. Grant, E. C. Rochon, M. J. McLaughlin, G. A. Gaudry, A. Vickery, H. P. Moulton, W. C. Gillis, N. Bawlf, J. R. Akins, F. H. Maynard, H. S. Day, H. E. Sutherland, F. H. Kitto, L. Goodday, F. H. H. Williamson, G. C. Webb, C. H. Wilding, R. P. Bray, E. W. Harrison, A. W. Ault, C. B. Binks, C. H. Holbrook, R. J. Dawson, Jas. Watters and E. Davy; in the office of the geographer, Messrs. J. Beveridge, J. P. McElligott, J. Pigeon and J. R. Merrifield; and in the lithographic office, Mr. J. H. Deslauriers.

## OFFICE OF THE CHIEF DRAUGHTSMAN.

A summary of the work executed in the office of the chief draughtsman is given as Appendix No. 5.

The last twelve months have seen a considerable increase in the draughtsmen's work. This is due partly to the fact that the surveys were on a larger scale, but perhaps still more to the constant increase in the miscellaneous business of the office, such as answers to inquiries, both from inside and outside the department, as to surveys made or proposed, areas, corner monuments, errors found or suspected in lines, petitions for resurveys, etc. The draughting office has gradually become of late years, and unavoidably so, to a great extent a correspondence office, a large portion of the letters sent out having to be drafted in this part of the branch.

The staff is larger by three than at the date of the last report, now including eighty-one men, whose time is fully occupied with necessary work in connection with the surveys. The frequent changes of personnel and the location of a part of the force in a separate building at some distance is still the cause of a certain amount of delay, and makes proper oversight of business more difficult. The staff is distributed in five divisions.

*First Division—Instructions and General Information.*

The staff of this division, which consists of nineteen employees, is in charge of Mr. T. E. Brown, B.A. Instructions were drafted for eighty-one survey parties, which involved the preparation of 879 sketches and 77 tracings and maps; 1,002 progress sketches were received from surveyors in the field, as well as 577 books of field notes, 334 plans, 56 timber reports and 473 statutory declarations; 494 books of field notes of township surveys were transmitted to the survey records office after complete examination, also 476 notes and plans of miscellaneous surveys. Plans were printed for 518 townships, 5 settlements or townsites and 59 sectional sheets. Preliminary plans of 369 townships were issued. A noteworthy feature about the work of this division is the great increase in the number of communications on miscellaneous subjects received and dealt with. The number for the year was 1,296, involving the preparation of 283 sketches and 77 maps and tracings; 3,427 draft letters and memoranda were written.

*Second Division—Examination of Surveyors' Returns.*

This division is in charge of Mr. T. S. Nash, D.L.S., and the staff consists of twenty-eight employees. The returns of all the surveys of Dominion lands in Manitoba, Saskatchewan and Alberta are examined here. Plans of these surveys are compiled and the accounts for the surveys performed under contract are made out.

Surveyors are required to send in from time to time sketches showing the progress of their work in the field. These sketches show the bearings and lengths of all the lines that have been surveyed together with all the important topography of the country. If on examination they are found incomplete, supplementary sketches are required from the surveyor. During the year 722 progress sketches were examined. When the final returns of surveys are received they are given a cursory examination,



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and if found generally incomplete they are sent back to the surveyor for correction. This, however, seldom happens, the returns now received being nearly always carefully made. After cursory examination the work of compiling is begun. This consists in gathering together all the returns of previous surveys in the township, settlement or townsite as the case may be and plotting the whole together as a new plan. During this process a minute examination is made of the field notes of the new survey, the surveyor is notified of all clerical errors, omissions or discrepancies found in his notes and is required to correct them before his survey is finally accepted. A more detailed description of the above work was given in the report for the year ended June 30, 1906. The same system with improvements in the minor details is still in use. During the year 347 subdivisions, 157 township outline and 23 miscellaneous survey returns were examined, 348 memoranda on examination were sent to surveyors, 323 answers to memoranda were received and noted, 857 letters were drafted and 556 plans compiled.

In addition to the examination and compilation mentioned above, a large amount of work is involved in the examination of plans of road diversions in Alberta and Saskatchewan surveyed under instructions from the provincial governments and in the examination of railway right-of-way plans for approval by the Surveyor General before being filed in the records office. During the year 233 plans of road diversions and 112 right-of-way plans were examined.

#### *Third Division—Drawing for Reproduction.*

The staff of this division which consists of fourteen employees is in charge of Mr. C. Engler, D.L.S. The most important work of this division is the preparation of copies properly drawn for reproduction by photo-zincography or photo-lithography of the rough plans compiled in the second and fourth divisions. The letters and figures of the plans are stamped with type held in position by means of the stamp described in the annual report for 1906-7. In this way uniformity of style is ensured and at the same time a beginner quickly acquires the skill necessary for speed and neatness. This has proved a decided advantage during the past few years owing to the constantly changing personnel of the staff of this division. The great majority of the plans drafted are township plans. Uniformity exists among these so that the work can be done systematically and occupies much less time than that upon plans of a miscellaneous character.

During the year 568 township plans and 130 miscellaneous plans were made. Although the number of miscellaneous plans is less than one-fourth of the number of township plans yet the time spent upon the former was almost as great as upon the township plans. A noteworthy feature about the miscellaneous plans is their variety. They comprise settlement, group lot and townsite plans, which are made something after the style and manner of township plans. Occasionally maps and plans are made to illustrate some subject under consideration by the House of Commons or the Senate.

There are also drawings of the diagrams of the altitude and bearing of the pole star. These have to be made with the greatest accuracy as the slightest error in drawing destroys the value of the diagrams. These diagrams are issued periodically with the astronomical field tables, the drawings for which are also prepared in this division.

Diagrams and explanatory drawings for the Manual of Survey, and artists' drawings for the illustration of pamphlets, have also been made. In the line of mechanical drawings, may be mentioned all drawings of survey instruments or of additions or alterations to the same, as well as drawings to scale of furniture or apparatus of a special nature required for this branch. Among the drawings of an artistic nature were two for the office, one of a crest and one of a letter head. In this class also may be mentioned the making of diplomas and certificates for the board of examiners for



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Dominion land surveyors and the engraving of graduations on instruments when special scales are required. On the small printing press, which forms part of the equipment of this division, a great deal of work has been done. The demand for this work has been so steady that it has been necessary to employ a man experienced in typesetting and presswork. He also takes care of the type used for stamping plans, the printers' ink, the composition rollers, etc. The press is used for printing titles and foot notes, which are pasted on the plans in proper position. In the same way are added the names of any large lakes, rivers, Indian reserves, etc., which cannot be stamped on the plan in the ordinary way. As all the plans are photographed, no traces of the edges of the pieces of paper added by pasting can be seen on the printed plan as the photographer removes them all in retouching the negative. The press is also used to print labels, numbers and letters for shelves, file backs and cupboards in the office, as well as any small blank forms required, circular letters to surveyors when it is impossible to obtain these from the Government Printing Bureau in time to serve the purposes for which they are required.

In order to be able to make suitable titles for all the different maps and plans and also to stamp all the letters and figures on the plans themselves, it has been necessary to procure a variety of type. Eighty-eight styles in all have been procured, but as only a small font of each style is necessary the expense of buying the type has not been great. The expense saved on a single plan by printing a title instead of drafting it often equals the total cost of the type required to print it.

*Fourth Division—British Columbia Surveys.*

This division consists of eight employees in charge of Mr. Rowan-Legg. The examination of the returns sent in by the three regular surveyors who were working in the railway belt has been proceeded with and is now well advanced. As most of the traverse surveys in British Columbia were made for the purpose of establishing section corners and land boundaries, this portion of the work had to be carefully checked by latitudes and departures, which entailed a great amount of work.

The returns of the survey by Mr. J. E. Ross, D.L.S., tying in various points along the right-of-way of the Revelstoke and Arrowhead Lake branch of the Canadian Pacific railway to points on the Dominion lands system of survey have been checked, and the areas of adjacent surveyed Dominion lands as well as of the right-of-way are now obtainable. Returns of small surveys consisting of mineral and other lots, private surveys and special surveys have also been received from Messrs. E. A. Cleveland, J. A. Kirk, W. A. Bauer and others. These have been or are being examined. Four plans of the Canadian Pacific railway right-of-way from Spatsum to Port Moody were also examined.

Owing to the recent more strict enforcement of the regulations for the survey of timber berths, it was found that more returns were being received by the Timber, Grazing and Irrigation Branch than could be dealt with. It was therefore decided that part of the examination of such returns should be undertaken by the staff of this office. The British Columbia division commenced this work, on the berths lying within the belt, in November, 1907, and completed, during the ensuing five months, the examination of sixty returns of surveys of this class.

In 1906 Mr. A. W. Johnson, D.L.S., made a resurvey of the town of Hope and the compilation of a plan of it was commenced in this office, but it was found that further surveys were required to furnish the information necessary to complete the plan.

In 1907 Mr. Johnson made a resurvey of the Pitt meadow lands and a special plan was made in order that these lands might be dealt with as soon as possible.

When compiling plans of many of the townships in the railway belt in British Columbia it is found that so many details, in connection with the showing of mineral



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claims, provincial lots, &c., have to be given that a plan, made to a scale of forty chains to one inch, is too crowded and indistinct. To obviate this difficulty in such cases, plans of quarter townships are made on a scale of twenty chains to one inch, which show the information clearly and make more useful plans. During the year 573 letters and memoranda have been received and dealt with, 330 sketches and plots made, sixty plans compiled for printing and 709 draft letters and memoranda prepared.

#### *Fifth Division—Mapping.*

The number of employees in this division is ten, the staff being in charge of Mr. J. Smith. The principal work of the fifth division is the preparation of sectional maps for publication, as shown in Appendix No. 6 and the registering and compiling of surveys in the Yukon Territory as shown in appendices Nos. 3 and 4.

In addition to the above, other maps that may be required by the department are drawn and proofs of maps being printed are examined.

The method of producing a sectional map is as follows: All available information, such as Dominion lands surveys, railroad locations, road surveys, &c., is drawn on good mounted paper on a scale of two miles to an inch; a clean tracing on cloth is then made, reproduced and printed by photo-lithography on a scale of three miles to an inch, then a reduced copy is made by photo-lithography on a scale of six miles to an inch.

During the present rapid development of the northwest provinces these prints are quickly 'out of date' and another edition becomes necessary. The original drawing is then revised, all new information being added and corrections made, the tracing is then corrected to agree with the original and the printing is repeated.

The corrections sometimes entail so much erasing, on the original and tracing, that after a few editions it is necessary to make entirely new drawings. During the past year two originals and four tracings had to be redrawn on this account.

The work on the Yukon surveys consists of keeping a register of all returns of surveys received, the examination of the field notes and plans and the plotting of the work on a general plan so as to show the relative positions of different claims and to ascertain if they encroach on claims previously surveyed. The plans accompanying the surveyors' returns are usually on a scale of two hundred feet to an inch and the general plan on a scale of forty chains to an inch.

In addition to the sectional maps and Yukon work a map of Churchill harbour was drawn for photo-lithography and a large diagram was made for office use showing the closings of surveys on base lines from the sixteenth to the twentieth base between the fifth and sixth meridians.

#### SURVEY RECORDS OFFICE.

A card system of indexing files relating to trails and roadways, in the provinces of Manitoba, Saskatchewan and Alberta, has been introduced. All communications in connection with these trails or roadways and the preparation of replies giving the areas deducted from the different quarter sections affected, as given by the Patents branch, are dealt with in this office. As the files are kept in this office and are rapidly increasing in number, the index above referred to enables us to readily find the correspondence relating to any of these trails or roadways.

A loose leaf alphabetical index of the plans kept in this office, numbering about 14,000, has been established, which enables a ready reference to all the plans recorded. The installation of these indexing systems was rendered necessary by the large increase in volume of the work of the office.

The following plans, showing the Dominion lands agencies, were prepared in this office and forwarded to their respective destinations:—

1. Five homestead maps showing Dominion lands agencies and sub-agencies in the provinces of Manitoba, Saskatchewan and Alberta.



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2. Thirteen homestead maps showing on each one sub-agency and the lands district agency to which it is subordinate.

3. Sixteen maps on a scale of one mile to an inch showing on each one sub-agency of Dominion lands, with the lands disposed of as shown on the latest homestead map preceding the date of compilation.

All these maps are mounted and bound on cotton for the use of the different agents in the provinces of Manitoba, Saskatchewan and Alberta.

A statement of the work executed by this office during the year is given in Appendix No. 7.

## PHOTOGRAPHIC OFFICE.

The amount of work executed in the photographic office during the year has been the largest in the history of the office. Several changes are being made in the equipment, which it is hoped will result in a further increase in the quantity of work and an improvement in quality.

The photo-zincograph process has produced a marked improvement in the plans turned out. A new power press now being installed in the lithographic office for handling large plates will, it is expected, result in a still greater improvement.

During the summer one of the photographers made a trip through Nova Scotia for the purpose of procuring for the immigration branch photographs illustrative of the industries of the province. Hitherto they had to depend for these photographs on the local photographers, and the results were not always satisfactory.

A schedule of the work executed in the photographic office is given as Appendix No. 8.

## LITHOGRAPHIC OFFICE.

This office was equipped with a power press and several hand presses. The increase of the work has been such that a second power press became necessary; this is now being installed. It is a rotary transfer press, taking zinc plates 28 x 48 inches. The impression is transferred from the zinc to a rubber blanket and from the latter to the paper. As an adjunct to the press, a machine for graining zinc plates had to be set up, as well as a large flat bed-press equipped with an electric motor. It is hoped that when the whole is in proper working order any lithographs that may be required will be turned out with despatch and efficiency.

The new power press requires two additional men—a printer and a feeder. One of the vacancies has already been filled by the appointment of J. H. Deslauriers as transferrer; he takes the place of J. Bergin, who has been put in charge of the press as printer. By reason of the general increase in the work, another lithographic artist will be needed; this will bring the staff to nine, as follows:—

One foreman.

Two lithographic artists.

One transferrer.

Two power press printers.

Two power press feeders.

One stone polisher and zinc grainer.

Part of the plant had to be placed in the Imperial Building on Queen street, which is somewhat inconvenient.

A statement of the work executed is given as Appendix No. 9.

## GEOGRAPHIC BOARD.

Mr. A. H. Whitcher, D.L.S., the secretary, is attached to the staff of the Surveyor General. The board consists of representatives from the different departments, and its duties are to decide the proper spelling of names throughout the Dominion. The



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decisions of the board are published in the *Canada Gazette*, and are then printed in bulletin form for distribution. The seventh annual report of the board is in course of preparation.

#### BOARD OF EXAMINERS FOR DOMINION LAND SURVEYORS.

Special meetings of the board were held on April 29, from May 2 to June 3, inclusive, on November 12 and on December 4, 1907; and the regular annual meeting from February 10 to March 16, inclusive, 1908.

During the meeting in May examinations were held at Ottawa, Kingston, Toronto and Calgary. Dr. Klotz presided at Kingston; Professor L. B. Stewart, D.L.S., at Toronto; and A. O. Wheeler, D.L.S., at Calgary.

During the regular meeting in February examinations were held at Ottawa, Vancouver, Calgary, Edmonton, Winnipeg, Toronto, Montreal and St. John. E. B. Hermon, D.L.S., presided at Vancouver; A. O. Wheeler, D.L.S., at Calgary; J. N. Wallace, D.L.S., at Edmonton; J. L. Doupe, D.L.S., at Winnipeg; Professor L. B. Stewart, D.L.S., at Toronto; T. Shanks, D.L.S., at Montreal, and T. S. Nash, D.L.S., at St. John.

At these examinations ninety-seven candidates presented themselves for the full preliminary examination, fifty of whom were successful, as follows:—

- J. R. Akins, Ottawa, Ont.
- C. B. Allison, South Woodslee, Ont.
- M. S. Archibald, Truro, N.S.
- E. Bartlett, Smithville, Ont.
- H. E. Bates, Mystic, Conn., U.S.A.
- G. A. Bennet, New Glasgow, P.Q.
- G. H. Broughton, Edmonton, Alta.
- H. R. Carscallen, Toronto, Ont.
- F. T. P. Cond, Toronto, Ont.
- G. C. Cowper, Welland, Ont.
- W. P. Dobson, Fordwich, Ont.
- M. Dennis, O'Leary, P.E.I.
- S. D. Fawcett, Ottawa, Ont.
- J. N. Finlayson, Merigomish, N.S.
- F. S. Fowler, Winnipeg, Man.
- J. R. Graham, Ottawa, Ont.
- C. A. Grassie, Smithville, Ont.
- C. D. Henderson, Toronto, Ont.
- C. M. Hoar, Hopewell Cape, N.B.
- H. W. Harris, Kingston, Jamaica.
- R. W. Hagen, Revelstoke, B.C.
- F. J. Heuperman, Edmonton, Alta.
- O. Inkster, Edmonton, Alta.
- E. B. Jost, Guysboro', N.S.
- L. B. Kingston, Ottawa, Ont.
- H. M. Lamb, Montreal, P.Q.
- A. Lighthall, Montreal, P.Q.
- W. G. McGeorge, Chatham, Ont.
- J. H. McKnight, Simcoe, Ont.
- L. A. McLean, Hensall, Ont.
- J. W. Menzies, Ottawa, Ont.
- P. Melhuish, Montreal, P.Q.
- C. A. Morris, Vancouver, B.C.
- J. S. Mairn, Truro, N.S.
- L. Odell, Odell, Ont.



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S. K. Pearce, Calgary, Alta.  
 I. Pounder, Ottawa, Ont.  
 H. G. Phillips, Saskatoon, Sask.  
 P. E. Palmer, Dorchester, N.B.  
 D. F. Robertson, Ottawa, Ont.  
 L. T. Rutledge, Glen Williams, Ont.  
 W. B. Redfern, Toronto, Ont.  
 W. A. Siegner, Tavistock, Ont.  
 J. J. Stock, Ottawa, Ont.  
 H. B. Stuart, Calgary, Alta.  
 R. T. H. Sailman, Malvern, Jamaica.  
 C. H. Taggart, Ottawa, Ont.  
 W. E. Taylor, Owen Sound, Ont.  
 W. R. White, Drayton, Ont.  
 J. K. Wyman, Rockland, Ont.

Thirty-five candidates presented themselves for the limited preliminary examinations, seventeen of whom were successful, as follows :—

C. D. Brown, Winnipeg, Man.  
 W. P. Copp, Sackville, N.B.  
 A. S. Campbell, Kingston, Ont.  
 W. Dale, Toronto, Ont.  
 D. J. Fraser, Ottawa, Ont.  
 J. H. W. Flanagan, Chelsea, London, S.W., Eng.  
 G. H. Herriot, Souris, Man.  
 H. Matheson, Armow, Ont.  
 H. B. Miller, Montreal, P.Q.  
 J. M. Mudie, Ottawa, Ont.  
 G. H. McCallum, Smith's Falls, Ont.  
 G. J. McKay, Owen Sound, Ont.  
 G. W. MacLeod, Parkhill, Ont.  
 W. H. Powell, Little Harbour, N.S.  
 O. Rolfson, Walkerville, Ont.  
 A. C. T. Sheppard, Ottawa, Ont.  
 W. D. Stavert, Edinburgh, Scotland.

Twenty-eight candidates presented themselves for the final examination for Dominion land surveyor, of whom twenty-one were successful, as follows :—

H. G. Barber, Ottawa, Ont.  
 E. P. Bowman, West Montrose, Ont.  
 W. B. Bucknill, Winnipeg, Man.  
 A. J. Elder, Ottawa, Ont.  
 A. Findlay, Winnipeg, Man.  
 A. C. Garner, South Qu'Appelle, Sask.  
 R. V. Heathcott, Edmonton, Alta.  
 M. Kimpe, Edmonton, Alta.  
 F. H. Kitto, Edmonton, Alta.  
 H. F. J. Lambart, Ottawa, Ont.  
 B. F. Mitchell, Hamilton, Ont.  
 J. E. Morrier, Ottawa, Ont.  
 T. H. Plunkett, Toronto, Ont.  
 H. T. Routly, Toronto, Ont.  
 C. Rinfret, St. Stanislas, P.Q.  
 E. W. Robinson, Victoria, B.C.



H. M. R. Soars, Edmonton, Alta.  
W. M. Stewart, Hamilton, Ont.  
A. S. Stewart, Edmonton, Alta.  
I. J. Steele, Ottawa, Ont.  
W. H. Young, Lethbridge, Alta.

At the February examination one candidate took Part I of the D.T.S. examination. He was not successful.

Oaths of office and allegiance and bonds for the sum of one thousand dollars each as required by clause 36 of the Dominion Lands Act were received from twenty-one candidates who had previously passed the necessary examinations for commissions as Dominion land surveyors and had complied with the other requirements of the Act.

Eighteen commissions as Dominion land surveyors were issued as follows:—

E. P. Bowman, West Montrose, Ont.  
F. F. Clarke, Toronto, Ont.  
P. C. Coates, Golden, B.C.  
A. J. Elder, Ottawa, Ont.  
A. C. Garner, South Qu'Appelle, Sask.  
R. V. Heathcott, Edmonton, Alta.  
M. Kimpe, Edmonton, Alta.  
F. H. Kitto, Edmonton, Alta.  
H. F. J. Lambart, Ottawa, Ont.  
A. J. Latornell, Edmonton, Alta.  
J. E. Morrier, Ottawa, Ont.  
G. B. McColl, Winnipeg, Man.  
N. Ogilvie, Ottawa, Ont.  
W. M. Stewart, Hamilton, Ont.  
W. H. Waddell, Hamilton, Ont.  
J. Waldron, Moosejaw, Sask.  
E. W. Walker, Regina, Sask.  
W. H. Young, Lethbridge, Alta.

Every Dominion land surveyor in active practice is required by clause 47 of the Dominion Lands Act to be in possession of a subsidiary standard measure of length furnished by the secretary of the board of examiners. Nineteen such standards were issued directly to surveyors during the year, and 24 were supplied to the Surveyor General of British Columbia for use by the surveyors of that province.

A list of the surveyors who have been furnished with standard measures up to March 31, 1908, will be found in Appendix No. 11.

The correspondence of the board amounted to:—

Letters, &c., received.. . . . .	1,328
Letters sent.. . . . .	1,050

The examination questions used at the examination in February, 1908, are submitted as Appendix No. 12.

A meeting of the board was called on April 29 to make arrangements for the special examination in May. The affidavits of the candidates for the final examination were received, and several communications disposed of.

At the meeting from May 2 to June 3, 31 candidates presented themselves for examination. The answer papers of these were read, and the revision of the curriculum of studies for the D. T. S. examination, which had been begun at the February meeting, was completed.

The meeting of November 12 was called to deal with several communications to the board.



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At the meeting of December 4 the interpretation of clause 32 of the Dominion Lands Act was discussed. The question had been referred to the Deputy Minister of Justice, who gave as his opinion that graduates in surveying within the meaning of clause 32, are not required to pass any examination previous to being articulated. The Dominion Lands Surveys Act, which came into force on March 17, 1907, makes it clear that all must now take this examination.

At the meeting in February 130 candidates were examined, the largest number that has ever appeared before the board.

The Dominion Lands Surveys Act removed certain privileges formerly granted by the Dominion Lands Act to surveyors from other parts of His Majesty's dominions who desire to qualify as Dominion Land Surveyors; and the rules of the board had to be amended accordingly. Another amendment to the rules prescribes the use of Chambers' tables at all examinations before the board.

## APPENDICES.

The following schedules and statements are appended:—

No. 1. Schedule of surveyors employed and work executed by them from April 1, 1907, to March 31, 1908.

No. 2. Schedule showing for each surveyor employed from April 1, 1907, to March 31, 1908, the number of miles surveyed, of township section lines, of township outlines, traverses of lakes and rivers and resurvey; also the cost of same.

No. 3. List of lots in the Yukon Territory surveys of which have been received from April 1, 1907, to March 31, 1908.

No. 4. List of miscellaneous surveys in the Yukon Territory, returns of which have been received from April 1, 1907, to March 31, 1908.

No. 5. Statement of work executed in the office of the chief draughtsman.

No. 6. List of new editions of sectional maps issued from April 1, 1907, to March 31, 1908.

No. 7. Statement of work executed in the survey records office from April 1, 1907, to March 31, 1908.

No. 8. Statement of work executed in the photographic office from April 1, 1907, to March 31, 1908.

No. 9. Statement of work executed in the lithographic office from April 1, 1907, to March 31, 1908.

No. 10. Names and duties of employees of the Topographical Surveys branch at Ottawa.

No. 11. List of Dominion Land Surveyors who have been supplied with standard measures.

No. 12. Examination papers of the board of examiners for Dominion Land Surveyors.

No. 13 to 43. Reports of surveyors employed.

No. 44. Descriptions of surveyed townships submitted by Dominion Land Surveyors from April 1, 1907, to March 31, 1908.

## MAPS.

The following maps accompany this report.

1. Map showing surveys and resurveys made from April 1, 1907, to March 31, 1908.

2. Topographical Survey of Canada,—Trigonometrical sections,—triangulation in British Columbia to accompany the report of P. A. Carson, D.L.S.

3. Topographical map of part of the main range of the Rocky Mountains adjacent to the Canadian Pacific railway to accompany the report of A. O. Wheeler, D.L.S.



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4. Map showing part of the sixth meridian, north of Jasper House, to accompany the report of A. Saint Cyr, D.L.S.

5. Plan of part of the province of Manitoba showing the water-powers on the Winnipeg river to accompany the report of W. Thibaudeau, C.E.

6. Map showing the drainage basin of the Winnipeg river to accompany the report of W. Thibaudeau, C.E.

7. Map of the Winnipeg river from lake Winnipeg to English river, and from English river to First fall, to accompany the report of W. Thibaudeau, C.E.

8. Plan of a group of eight falls on the Winnipeg river to accompany the report of W. Thibaudeau, C.E.

9. Diagram of the Winnipeg river showing cross-section, discharge, &c., to accompany the report of W. Thibaudeau, C.E.

10. Profile of Winnipeg river from lake Winnipeg to English river and Pinawa channel to accompany the report of W. Thibaudeau, C.E.

I have the honour to be, sir,

Your obedient servant,

E. DEVILLE,  
*Surveyor General.*



TOPOGRAPHICAL SURVEYS BRANCH.

SCHEDULES AND STATEMENTS.

APPENDIX No. 1.

SCHEDULE of Surveyors employed and work executed by them, from April 1, 1907,  
to March 31, 1908.

Surveyor.	Address.	Description of Work.
Aylsworth, C. F .....	Madoc, Ont.....	Resurvey of parts of townships 14, 15 and 16, range 7, and parts of townships 15, 16 and 17, range 8, all east of the principal meridian.
Baker, J. C.....	Vermilion, Alta.....	Contracts Nos. 2 and 24 of 1907 ; subdivision of townships 53, ranges 10, 11, 12, 13 and 17, townships 54, ranges 9 and 10, the southerly two-thirds of townships 54, ranges 11, 12, 13, 14, 15 and 16, the northerly two-thirds of township 53, range 16, and the east outlines of townships 55 and 56, ranges 10 and 11, and townships 53, ranges 14 and 15, all west of the fifth meridian.
Beatty, David.....	Parry Sound, Ont.....	Retracement survey of townships 27, 28, 29, 30 and 31, range 6, townships 27 and 28, range 7, and traverse in township 32, range 6, west of the fourth meridian ; retracement and restoration survey in township 50, range 27, west of the third meridian.
Belanger, P. R. A .....	Ottawa, Ont ... ..	Inspection of contracts Nos. 17, 18 and 19 of 1906, Nos. 2, 16, 22 and part of 24 of 1907, completion of inspection of contracts Nos. 16 and 21 of 1906. Miscellaneous surveys between the second and third meridians and retracement in township 53, range 3, west of the fifth meridian.
Bolton, Lewis....	Listowel, Ont.....	Miscellaneous surveys at The Pas and along Cormorant lake, in the Northwest Territories.
Bourgault, C. E..	St. Jean Port Joli, Que..	Subdivision and resurvey in townships 14 and 15, range 5, and township 14, range 6 ; retracement survey in townships 18 and 22, range 4, township 19, range 3, townships 21 and 22, range 5, and township 22, range 6 ; resurvey of the north boundary of Spruce Woods timber reserve in townships 10, ranges 15 and 16, all west of the principal meridian. Survey of the colonization road, north from Teulon, across townships 16 and 17, range 2, and township 17, range 1, east of the principal meridian, and across townships 17, 18, 19 and 20, range 1, west of the principal meridian.
Bray, Edgar.....	Oakville, Ont.....	Contract No. 11 of 1907 ; subdivision of township 37, range 2, and parts of township 37, range 1, and townships 38, ranges 1 and 3, all west of the second meridian.
Carson, P. A.....	Ottawa, Ont.....	Triangulation surveys in British Columbia in connection with the Trigonometrical Section of the Topographical Survey of Canada.
Cautley, R. H .....	Edmonton, Alta.....	Contract No. 23 of 1907 ; subdivision of townships 33 and 34, ranges 14, 15, 16, 17, 18, 19 and 20, west of the fourth meridian.
Cautley, R. W .....	Edmonton, Alta.....	Contract No. 28 of 1907 ; subdivision of townships 41, ranges 15, 16 and 17, and townships 42, ranges 10, 11 and 16, all west of the second meridian.
Chilver, C. A.....	Glen Lyon, Man.....	Contract No. 6 of 1907 ; subdivision of townships 37, ranges 5 and 6, townships 38, ranges 4, 5, 6, 10 and 11 ; survey of the east outlines of townships 37 and 38, range 7, townships 39, ranges 5, 6, 7 and 10, and of townships 40, ranges 5, 6 and 7, all west of the second meridian.



8-9 EDWARD VII., A. 1909

## APPENDIX No. 1.

SCHEDULE of Surveyors employed, and work executed by them, from April 1, 1907, to March 31, 1908.—*Continued.*

Surveyor.	Address.	Description of Work.
Christie, W. ....	Chesley, Ont. ....	Survey of the eighth base line across ranges 1, 2, 3, 4, 5, 11, 12, 13, 14 and part of 10; the ninth base line across ranges 10, 11, 12, 13, 14, 15, 16, 17, 18 and part of 19, all west of the principal meridian; survey of the principal meridian across townships 26, 27 and 28.
Côté, J. L. ....	Edmonton, Alta. ....	Contract No. 9 of 1907; subdivision of townships 65 and 66, ranges 19, 20, 21 and 23, township 66, range 22, north of Athabaska river; survey of the east outlines of townships 67 and 68, ranges 19, 20, 21, 22 and 23, all west of the fourth meridian.
Davies, T. A. ....	Ottawa, Ont. ....	Retracement and restoration survey in townships 51, 52, 53 and part of 50, range 26, west of the third meridian; township 41, range 16; townships 41, 42 and 43, range 17; townships 43 and 44, range 18, and township 44, range 19, west of the fourth meridian; correction survey in township 50, range 2; township 52, range 8; township 44, range 17; township 45, range 18, and township 43, range 20, west of the fourth meridian; part subdivision of township 52, range 22, west of the third meridian.
Deans, W. J. ....	Brandon, Man. ....	Retracement and restoration survey of township 24, range 30, west of the principal meridian, and township 21, range 1, west of the second meridian; traverse of Whitesand river from the second meridian to the Assiniboine river and of lakes in township 24, range 2, township 32, range 9, and township 34, range 3, west of the second meridian; correction survey in township 14, range 7, west of the second meridian; survey of Doukhobor villages in townships 30, ranges 1 and 5, township 31, range 3, and townships 31 and 32, range 6, west of the second meridian; survey of townships 29 and 30, between Whitesand and Assiniboine rivers and of the south and east boundaries of Côté Indian reserve.
Dumais, P. T. C. ....	Hull, Que. ....	Contract No. 33 of 1907; resurvey of parts of township 18, range 20, and township 20, range 22, west of the principal meridian.
Edwards, Geo. ....	Ponoka, Alta. ....	Contract No. 19 of 1907. Subdivision of townships 27, 28, 29 and 30, ranges 14, 15 and 16, and parts of townships 27, ranges 17 and 18, all west of the fourth meridian.
Fairchild, C. C. ....	Brantford, Ont. ....	Contract No. 8 of 1907. Subdivision of townships 29, 30, 31 and 32, ranges 18, 19 and 20, and townships 29, 30 and 31, range 21, all west of the fourth meridian.
Fawcett, Adam ..	Gravenhurst, Ont. ....	Contract No. 30 of 1907. Subdivision of townships 27, 28, 29, 30 and 31, range 14, part of township 31, range 15, and part resurvey of township 30, range 15, all west of the principal meridian.
Fontaine, L. E. ....	Levis, Que. ....	Traverse of Milk river through Canadian territory. Survey of part of township 4, range 6, west of the fourth meridian.
Green, W. T. ....	Ottawa, Ont. ....	Miscellaneous surveys in townships 13 and 15, range 1; townships 14, ranges 1 and 2; townships 20 and 22, range 4 and township 21, range 5; traverses of Bow and Cascade rivers, of the Canadian Pacific railway canal in township 25, range 11, and of Highwood river in township 18, range 1, all west of the fifth meridian; traverse of Little Bow river in township 13, range 24, west of the fourth meridian; resurvey of Brewster Leasehold in the Rocky Mountains Park.



SESSIONAL PAPER No. 25b

## APPENDIX No. 1.

SCHEDULE of Surveyors employed and work executed by them, from April 1, 1907, to March 31, 1908.—*Continued.*

Surveyor.	Address.	Description of Work.
Grover, G. A.....	Norwood, Ont.....	Contract No. 27 of 1907. Subdivision of townships 42 and 43, range 9; townships 40 and 43, range 10 and townships 39, 40 and 43, range 11; survey of the east outlines of townships 42 and 44, range 10 and of townships 41, 42 and 44, range 11, all west of the second meridian.
Hawkins, A. H.....	Listowel, Ont.....	Survey of the thirteenth base line across ranges 18 to 23 inclusive; the twelfth base line across ranges 9 to 14 inclusive, and resurvey of twelfth base line across ranges 1 to 8 inclusive, between the fifth and sixth meridians.
Holcroft, H. S.....	Toronto, Ont.....	Contract No. 5 of 1907. Subdivision of townships 49, 50, 51 and 52, range 15, and townships 51 and 52, range 16, west of the third meridian.
Hopkins, M. W.....	Edmonton, Alta.....	Contract No. 4 of 1907. Subdivision of townships 59 and 60, ranges 1, 2, 3 and 4, and townships 59, 60, 61 and 62, ranges 5 and 6; survey of the east outlines of townships 57 and 58, ranges 2 and 3, and townships 63 and 64, ranges 6 and 7, all west of the fourth meridian.
Hubbell, E. W..	Ottawa, Ont.....	Miscellaneous surveys in township 46, range 21; townships 44 and 46, range 22; township 46, range 23; township 27, range 24; townships 45 and 49, range 26; townships 17, 20, 21 and 22, range 29 and township 18, range 30, west of the second meridian, and in townships 33, 34 and 35, range 1, and township 34, range 2, west of the third meridian; traverse in township 25, range 25, west of the second meridian. Inspection of contracts Nos. 5, 15, 20 and 21 of 1907. Completion of inspection of contract No. 12 of 1906.
Johnson, A. W.....	Kamloops, B. C.....	Subdivision survey in township 4, range 28, and townships 2, 4, 9, 10 and 11, range 29, and resurvey in township 3, range 28 and township 4, range 29, west of the sixth meridian, and in townships 5 and 6, range 4, and in townships 4, 5 and 6, range 5, west of the seventh meridian. Traverses in townships 3 and 4, range 28, west of the sixth meridian, and in townships 5 and 6, range 4, and in townships 4, 5 and 6, range 5, west of the seventh meridian. Survey of Pitt meadows in townships 40 and 42, east of the coast meridian. Survey of part of the townsite of Yale, and correction survey of the townsite of Hope in townships 7 and 5, respectively, range 26, west of the sixth meridian.
Kimpe, M....	Edmonton, Alta.....	Contract No. 16 of 1907. Subdivision of township 58, range 8; townships 57 and 58, range 9; townships 58 and 59, range 10; townships 59, ranges 11 and 12, and townships 60, ranges 10, 11 and 12, south of Athabaska river. Survey of east boundaries of townships 59 and 60, range 9; township 57, range 10; townships 57 and 58, ranges 11 and 12, and townships 57, 58, 59 and 60, range 13, all west of the fifth meridian.
Kirk, J. A.....	Revelstoke, B. C.....	Subdivision in township 26, range 20, west of the fifth meridian, and township 23, range 2, west of the sixth meridian.
Knight, R. H .....	Edmonton, Alta .....	Contract No. 22 of 1907. Subdivision of township 61, range 1; townships 60 and 61, range 2, and township 61, ranges 3, 4 and 5. Survey of the east boundary of township 61, range 6, all west of the fifth meridian.



## APPENDIX No. 1.

SCHEDULE of Surveyors employed, and work executed by them, from April 1, 1907, to March 31, 1908.—*Continued.*

Surveyor.	Address.	Description of Work.
Lonergan, G. J.....	Buckingham, Que.....	Inspection of part of contract No. 15 of 1905, contracts No. 24 of 1906, and Nos. 4, 8, 9, 10, 18, 19 and 23 of 1907. Traverse in township 36, range 19 west of the fourth meridian. Miscellaneous resurveys in township 57, range 10: township 59, range 12; township 26, range 17; township 52, range 21; and townships 51, ranges 25 and 26; part subdivision of township 27, range 17, and township 51, range 21, all west of the fourth meridian.
Magrath, C. A.....	Lethbridge, Alta.....	Contract No. 18 of 1907. Subdivision of townships 7 and 8, range 12, and township 8, range 13, all west of the fourth meridian.
Miles, C. F... ..	Toronto, Ont.....	Inspection of contracts Nos. 17, 25 and 41 of 1907, and parts of contracts Nos. 10, 13 and 25 of 1906. Survey of the townsites of Ernfold and Chaplin in township 17, range 7, and township 17, range 5, respectively, west of the third meridian. Correction survey in township 6, range 14, west of the second meridian. Retracement surveys in township 23, range 26, west of the second meridian. And in townships 21 and 24, range 1, township 24 and part of township 23, range 2, west of the third meridian.
Molloy, John.....	Winnipeg, Man .....	Contract No. 32 of 1907. Subdivision of township 8, range 14; townships 1, 2, 3, 4, 5, 6, 7 and 8, range 15, all east of the principal meridian.
Montgomery, R. H..	Prince Albert, Sask... ..	Contract No. 13 of 1907. Subdivision of townships 50, ranges 15, 16 and 17, north of the Saskatchewan river; townships 50, ranges 18, 19, 20 and 21; townships 51, ranges 19, 20 and 21; north one-third of township 49, range 19. Survey of the east outlines of townships 51 and 52, ranges 15, 16, 17 and 18, and townships 52, ranges 19, 20 and 21, all west of the second meridian.
McLennan, A. L. ...	Toronto, Ont.....	Contract No. 20 of 1907. Subdivision of townships 51, ranges 24 and 25; townships 52, ranges 23, 24, 25, 26 and 27, west of the second meridian; and townships 52, ranges 1 and 2, west of the third meridian.
McFarlane, W. G. .	Toronto, Ont.....	Contract No. 1 of 1907. Subdivision of townships 42 and 43, range 12; the south one-third of townships 45, ranges 1, 2, 3, 4, 5, 6 and 7, and the south two-thirds of townships 45, ranges 8, 9, 10 and 11. Survey of the east outline of township 41, range 12, and miscellaneous subdivision in township 44, range 1, and township 45, range 12, all west of the second meridian. Subdivision of the west half of township 41, range 25; the east half of townships 41 and 43, range 26; the north one-third of townships 44, ranges 28, 29, 30 and 31; miscellaneous subdivision in townships 42, ranges 25 and 26; townships 44, ranges 26, 27 and 32, and in township 45, range 32, all west of the principal meridian.
McGrandle, H. . . .	Wetaskiwin, Alta. ...	Contract No. 10 of 1907. Subdivision of township 60, range 23; townships 66, 67 and 68, range 24. Survey of the east outline of townships 65, 66, 67 and 68, range 25, all west of the fourth meridian.
McMillan, Geo.....	Ottawa, Ont.....	Inspection of contracts Nos. 2, 9 and 27 of 1906, and contracts Nos. 3 and 12 of 1907. Resurvey of river lots in township 18, range 10, east of the principal meridian. Completion of the survey of the townsite of Gimli. Retracement and restoration survey of Manitoba House settlement in township 22, range 11, and in township 21, range 10, west of the principal meridian.



SESSIONAL PAPER No. 25b

## APPENDIX No. 1.

SCHEDULE of Surveyors employed and work executed by them, from April 1, 1907, to March 31, 1908.—*Continued.*

Surveyor.	Address.	Description of Work.
O'Hara, W. F. ....	Ottawa, Ont. ....	Survey of the second base line across ranges 2, 3 and part of 4. Subdivision of part of township 5, range 2, and parts of townships 5 and 6, range 3, all west of the fifth meridian.
Ord, L. R. ....	Winnipeg, Man. ....	Contract No. 34 of 1907. Subdivision of townships 64, ranges 21, 22, 23 and 24, and survey of the east outline of township 64, range 25, west of the fourth meridian.
Parsons, J. L. R. ....	Toronto, Ont. ....	Contract No. 17 of 1907. Subdivision of townships 1 and 2, ranges 17 and 18; townships 4, ranges 23 and 24; townships 9, ranges 25, 26 and 27; township 6, range 29, and townships 4, 5 and 6, range 30. Survey of the east outlines of townships 1 and 2, range 19, all west of the second meridian. Subdivision of townships 4, 5 and 6, range 1; townships 4, 5, 7, 8, 9, 10, 11 and 12, range 2; townships 5, 11 and 12, range 3; townships 12, ranges 4 and 5; townships 11 and 12, ranges 6, 7, 8, 9 and 10; survey of the east boundaries of townships 6, 7 and 8, range 3, all west of the third meridian.
Pearce, W. ....	Calgary, Alta. ....	Resurvey of township 24, range 22, and the east boundaries of sections 27 and 34, township 27, range 27, west of the fourth meridian.
Ponton, A. W. ....	Macleod, Alta. ....	Survey of the fifth meridian from the twentieth base to the twenty-second base; subdivision in township 10, range 29, west of the fourth meridian.
Reilly, W. R. ....	Regina, Sask. ....	Subdivision of townships 54, ranges 27 and 28. Retracement of township 34, range 6; part of township 38, range 13, and townships 51, 52 and 53, range 27, west of the third meridian. Mounding in townships 41 and 42, range 27, west of the second meridian. Traverse of two lakes, one in township 20, range 22, west of third meridian, and one in township 52, range 1, west of the fourth meridian.
Ross, Geo. ....	Welland, Ont. ....	Survey of the fourteenth base line across ranges 13 to 28, inclusive, west of the fifth meridian.
Ross, Jos. E. ....	Kamloops, B.C. ....	Traverse of the Columbia river through townships 30 and 31, range 25; townships 31 and 32, range 26, and township 32, range 27, west of the fifth meridian. Subdivision in townships 19, ranges 6 and 7; townships 18, ranges 7 and 8; townships 17, 18 and 19, range 9; townships 17, 18, 19 and 20, range 10; townships 17 and 18, range 11; township 18, range 12; townships 17, 18 and 19, range 14. Resurvey in townships 19, ranges 15 and 17, and townships 19 and 20, range 18, all west of the sixth meridian. Traverse in township 19, range 6; townships 18 and 19, ranges 7 and 9; townships 17, ranges 10, 12 and 13; townships 17 and 18, range 14; township 19, range 15, and township 20, range 18, all west of the sixth meridian.
Roy, G. P. ....	Quebec, Que. ....	Contract No. 21 of 1907. Subdivision of township 47, range 11; townships 49, ranges 12 and 13; townships 49, 50 and 51, range 14. Survey of the east outline of township 52, range 14, all west of the third meridian.
Saint Cyr, A. ....	Ottawa, Ont. ....	Survey of the sixth meridian from the sixteenth base line to the fourteenth base line; East outline of townships 51 and 52, range 27, west of the fifth meridian; and traverse from the southeast corner of township 51, range 27, west of the fifth meridian, to the northeast corner of township 48, range 1, west of the sixth meridian.



## APPENDIX No. 1.

SCHEDULE of Surveyors employed, and work executed by them, from April 1, 1907, to March 31, 1908.—*Continued.*

Surveyor.	Address.	Description of Work.
Saint Cyr, J. B.....	Montreal, Que.....	Subdivision of township 78, range 3; part of township 80, range 4, and parts of townships 71 and 72, range 6; survey of east outlines of townships 77, 79 and 80, ranges 3 and 4; township 78, range 4; township 80, range 5, and township 72, range 7, all west of the sixth meridian. Survey of Flyingshot Lake settlement, Spirit River settlement, and Peace River settlement, situated respectively in township 71, range 6, townships 78, ranges 5 and 6, west of the sixth meridian, and township 84, range 21, west of the fifth meridian.
Saunders, B. J.....	Edmonton, Alta... ..	Survey of the meridian between ranges 8 and 9 across townships 19A, 19, 20, 21, 22, 23, 24, 25 and 26; the fourth base line across ranges 16 and 17, and part of 15; the sixth and seventh base lines across ranges 8 and 9, all east of the principal meridian.
Selby, H. W.....	Toronto, Ont....	Subdivision of townships 74 and 75, ranges 14 and 15, and parts of townships 77, ranges 15 and 16. Survey of the east outlines of townships 73, ranges 14 and 15, all west of the fifth meridian.
Smith, C. C.....	Brampton, Ont.....	Subdivision survey in township 10 range 29 west of the fourth meridian; also part survey of townships 10 and 11 ranges 2 and 3, and subdivision in townships 7 and 8 ranges 5 and 6 west of the fifth meridian; survey of the townsite of Grassy Lake in township 10 range 13, west of the fourth meridian.
Stacey, A. G.....	Ottawa, Ont.....	Miscellaneous surveys in townships 20 ranges 18 and 19, townships 19, 20 and 21 range 20, townships 19 and 21 range 21, townships 16, 19 and 20 range 22, townships 15, 16, 20 and 21 range 23, township 20 range 24, townships 17, 22 and 23 range 25 and townships 20, 21 and 22 range 26, all west of the sixth meridian; traverse in townships 20 ranges 18 and 19, township 21 range 20, townships 19 and 21 range 21, township 20 range 22, townships 15, 20 and 21 range 23 and townships 22 and 23 range 25, all west of the sixth meridian.
Stewart, P. G.....	Britannia Bay, Ont.....	Exploration survey of townships 52 ranges 7 to 16 inclusive, townships 53 ranges 13 to 16, townships 54 ranges 11 to 15, townships 55 ranges 11 to 14, and townships 56 ranges 11 to 13, all west of the fifth meridian.
Teasdale, C. M.....	Concord, Ont.....	Contract No. 41 of 1907; partial subdivision of township 10 range 4, and subdivision of township 11 range 4, and townships 10 and 11 range 5, all west of the third meridian. Contract No. 26 of 1907; subdivision of townships 25 and 26 ranges 8 and 9, all west of the principal meridian.
Thibaudeau, W.....	Ottawa, Ont.....	Preliminary investigation of the water-powers on the Winnipeg river, between lake Winnipeg and the eastern boundary of Manitoba.
Tyrrell, J. W.....	Hamilton, Ont.....	Contract No. 14 of 1907; subdivision of township 24 range 1, townships 24 and 25 ranges 2 and 3, and township 25 range 4; survey of the east outline of township 25 range 1, and resurvey of the north outline of township 24 range 4, all east of the principal meridian; subdivision of townships 24 ranges 1, 2, 3 and 5, all west of the principal meridian.
Waldron, J.....	Moosejaw, Sask.....	Contract No. 25 of 1907; subdivision of townships 8 ranges 16, 17, 18, 19 and 20, also part of township 8 range 21, west of the third meridian.
Wallace, J. N.....	Calgary, Alta.....	Survey of the boundary between British Columbia and the Yukon Territory between Stations 'M' and 'N' across the Dalton trail.



SESSIONAL PAPER No. 25b

## APPENDIX No. 1.

SCHEDULE of Dominion Land Surveyors employed, and work executed by them, from April 1, 1907, to March 31, 1908.—*Continued.*

Surveyor.	Address.	Description of Work.
Warren, Jas.....	Walkerton, Ont.....	Contract No. 15 of 1907 ; subdivision of township 51 range 3, townships 50 and 51 range 4, township 48 range 6 and townships 48 and 49 range 7, and the east outline of township 49 range 8, all west of the third meridian.
Watt, G. H.....	Ottawa, Ont.....	Contract No. 12 of 1907 ; completion of subdivision of township 16 range 12, townships 13 and 14 range 13 ; subdivision of townships 15, 16 and 17 range 13, townships 13 and 14 range 14 ; survey of the south outline of township 15 range 14, all east of the principal meridian.
Wheeler, A. O.....	Calgary, Alta... ..	Topographer of the Department of the Interior. Phototopographical survey of the railway belt west of Golden, British Columbia, in the Dogtooth and Selkirk mountains.



APPENDIX NO. 2.

SCHEDULE showing for each Surveyor employed from April 1, 1907, to March 31, 1908, the number of miles surveyed of township section lines, township outlines, traverses of lakes and rivers, and resurvey, also the cost of the same.

Surveyor.	Miles of section line.	Miles of outline.	Miles of traverse	Miles of resurvey	Total mileage.	Total cost.	Cost per mile.	Day or contract.
Aylsworth, C. F.....				217 00	217 00	\$ 7,684 31	\$ 35 41	Day.
Baker, J. C.....	556 43	107 45	95 50		759 38	21,727 50	28 84	Contract.
Beatty, David.....			44 64	363 00	407 64	4,078 98	10 00	Day.
Belanger, P. R. A.....			2 00	100 00	102 00	8,477 68		"
Bolton, Lewis.....			24 92		24 92	1,898 59	76 19	"
Bourgault, C. E.....	108 00	14 00	49 76	271 00	442 76	8,299 00	18 52	"
Bray, Edgar.....	120 86	20 23	1 11		142 20	4,360 71	30 66	Contract.
Cautley, R. H.....	660 94		138 96		799 90	6,604 49	8 26	"
Cautley, R. W.....	261 92		93 53		355 45	7,814 58	21 98	"
Chilver, C. A.....	314 13	91 59	48 34		484 06	14,102 17	29 13	"
Christie W.....	117 00	17 00			134 00	10,578 94	78 95	Day.
Côté, J. L.....	390 79	96 61	55 13		542 53	15,998 60	29 49	Contract.
Davies, T. A.....	2 00			625 00	627 00	9,554 30	15 24	Day.
Deans, W. J.....			71 88	278 50	350 38	5,627 53	16 06	"
Dumais, P. T. C.....			54 64	91 79	146 43	3,028 77	20 68	Contract.
Edwards, George.....	641 75		26 17		667 92	5,471 81	8 19	"
Fairchild, C. C.....	749 78		96 55		846 33	7,959 81	9 40	"
Fawcett, A.....	196 52	25 51	29 57		251 60	5,700 62	22 65	"
Fontaine, L. E.....	17 00		510 40		527 40	7,690 89	14 58	Day.
Green, W. T.....	79 25	6 00	42 86	9 00	137 11	6,719 35	49 00	"
Grover, G. A.....	361 69	47 81	53 60		463 10	12,454 53	26 89	Contract.
Hawkins, A. H.....		120 00			120 00	16,750 00	139 58	Day.
Holcroft, H. S.....	244 97	12 10	99 84		356 91	7,854 88	22 00	Contract.
Hopkins, M. W.....	741 82	100 61	260 10		1102 53	27,197 83	24 66	"
*Hubbell, E. W.....			1 45	249 50	250 95	10,178 80		Day.
Johnston, A. W.....	6 30	20 60	102 80	29 80	159 50	10,855 73	68 05	"
Kimpe, M.....	370 06	114 84	55 66		540 56	16,145 31	29 86	Contract.
Kirk, J. A.....	17 40		4 00	2 50	23 90	974 40	40 77	Day.
Knight, R. H.....	284 51	29 92	45 92		360 35	10,520 16	29 19	Contract.
*Lonergan, G. J.....			8 15	63 50	71 65	7,280 38		Day.
Magrath, C. A.....	138 00				138 00	992 28	7 19	Contract.
*Miles, C. F.....			20 60	232 50	253 10	9,388 19		Day.
Molloy, John.....	618 17	54 77			672 94	20,664 31	30 70	Contract.
Montgomery, R. H.....	521 89	122 62	36 15		680 66	20,497 64	30 11	"
MacLennan, A. L.....	359 63	12 03	38 05		409 71	10,831 61	26 43	"
McFarlane W. G.....	562 89	25 00	17 23		605 12	18,048 36	29 82	"
McGrandle, H.....	187 65	36 21	67 56		291 42	7,581 61	26 01	"
*McMillan, Geo.....			86 44	24 50	110 94	10,935 56		Day.
O'Hara, W. F.....	59 00		2 75		61 75	7,071 98	114 52	"
Ord, L. R.....	193 22	30 20			223 42	6,104 47	27 32	Contract.
Parsons, J. L. R.....	1821 48	66 13	107 25		1994 86	15,424 52	7 73	"
Pearce, W.....				43 84	43 84	221 25	5 05	"
Ponton, A. W.....	3 00	48 00			51 00	7,920 00	155 29	Day.
Reilly, W. R.....	10 05		34 78	247 00	291 83	4,303 89	14 74	"
Ross, Geo.....		90 77			90 77	13,275 34	146 25	"
Ross, J. E.....	60 50	16 00	81 20	15 30	173 00	8,224 52	47 54	"
Roy, G. P.....	303 07	24 17	77 30		404 54	9,893 90	24 45	Contract.
Saint Cyr, A.....		60 50	18 00		78 50	17,100 00	217 83	Day.
Saint Cyr, J. B.....	120 00	69 00	114 26		303 26	10,876 21	35 83	"
Saunders, B. J.....	30 50	42 50			73 00	10,100 00	138 36	"
Selby, H. W.....	176 00	28 00	9 00		213 00	8,254 24	38 75	"
Smith, C. C.....	85 50		30 14		115 64	5,573 63	48 19	"
Stacey, A. G.....	83 30	10 00	36 00	41 70	174 00	7,729 84	44 42	"
Teasdale, C. W.....	339 30	17 80	93 82		450 92	6,766 40	15 00	Contract.
Tyrrell, J. W.....	640 70	29 05	34 53		704 28	19,915 81	28 24	"
Waldron, J.....	278 51	30 20	8 76		317 47	2,602 24	8 19	"
Wallace, J. N.....			17 13	9 21	26 34	9,818 68	372 76	Day.
Warren, Jas.....	257 99	6 00	96 94		360 93	9,265 29	25 67	Contract.
Watt, G. H.....	586 18	31 15	147 60		764 93	20,480 62	26 78	"
Total.....	13709 65	1674 37	3192 97	2917 64	21494 63	583,451 04		

\* Inspecting contract surveys a portion of the season.



SESSIONAL PAPER No. 25b

APPENDIX No. 3.

List of lots in the Yukon Territory surveys of which have been received from April 1, 1907, to March 31, 1908.

GROUP No. 1.

Lot No.	Area in Acres.	Surveyor.	Year of Survey.	Date of Approval.	Claimant.	Remarks.
40	1.00	C. S. W. Barwell	1907..	Oct. 11, 1907..	D. A. McRea <i>et al.</i> .....	Surface.

GROUP No. 2.

345	40.00	T. D. Green..	1907..	May 29, 1907..	Chris. H. Authier....	Surface.
346	1.29	"	1907..	" 29, 1907..	" " .....	"
352	91.14	C. W. MacPherson .....	1907..	Oct. 11, 1907..	H. H. Norwood Co.....	"
353	94.25	"	1907..	" 11, 1907..	" " .....	"
354	114.74	"	1907..	" 11, 1907..	" " .....	"
355	87.00	"	1907..	" 11, 1907..	" " .....	"
356	99.75	"	1907..	" 11, 1907..	" " .....	"
359	51.6	C. S. W. Barwell	1907..	" 7, 1907..	Wm. Elliott <i>et al.</i> .....	Mineral claim.
360	38.9	"	1907..	" 7, 1907..	" .....	"
361	37.1	"	1907..	" 7, 1907..	" .....	"
362	47.4	"	1907..	" 7, 1907..	" .....	"
367	29.9	"	1907..	" 7, 1907..	" .....	"
368	51.6	"	1907..	" 7, 1907..	" .....	"
369	51.6	"	1907..	" 7, 1907..	" .....	"
370	51.6	"	1907..	" 7, 1907..	" .....	"
371	51.6	"	1907..	" 7, 1907..	" .....	"
372	51.6	"	1907..	" 7, 1907..	" .....	"
373	51.6	"	1907..	" 7, 1907..	" .....	"
374	51.6	"	1907..	" 7, 1907..	" .....	"
383	11.47	C. W. MacPherson .....	1907..	" 30, 1907..	O. R. Brenner.....	Surface.
384	11.47	"	1907..	" 30, 1907..	" .....	"
385	11.47	"	1907..	" 30, 1907..	" .....	"
386	11.47	"	1907..	" 30, 1907..	" .....	"
388	.....	C. S. W. Barwell	1904..	*	{ White channel Gold .....	"
					{ Hill Hyd'c. Co. Ltd.....	

GROUP No. 5.

66	32.36	H. G. Dickson..	1905..	June 22, 1907..	J. P. Whitney <i>et al.</i> .....	Mineral claim.
67	26.93	"	1905..	" 22, 1907..	" .....	"
68	51.39	"	1905..	" 22, 1907..	" .....	"
69	50.10	"	1905..	" 22, 1907..	" .....	"
71	42.88	"	1907..	Oct. 21, 1907..	" .....	"
72	40.34	"	1907..	" 21, 1907..	" .....	"
73	48.17	"	1907..	" 21, 1907..	" .....	"
74	31.73	"	1907..	" 21, 1907..	" .....	"
75	42.35	"	1907..	" 21, 1907..	" .....	"
76	24.60	"	1907..	" 21, 1907..	" .....	"
77	25.46	"	1907..	" 21, 1907..	" .....	"
78	49.95	"	1906..	June 22, 1907..	Bryson N. White....	"
79	40.08	"	1906..	" 22, 1907..	" .....	"
80	50.82	"	1906..	" 22, 1907..	" .....	"
81	17.82	"	1906..	" 22, 1907..	" .....	"
82	51.65	"	1906..	" 22, 1907..	" .....	"
83	51.65	"	1906..	" 22, 1907..	" .....	"
84	49.06	"	1907..	*	C. H. Johnston <i>et al.</i> .....	"
85	44.80	"	1907..	*	" .....	"
86	49.16	"	1907..	*	" .....	"
87	49.15	"	1907..	*	" .....	"

\* Not yet approved.



APPENDIX No. 3.

List of Lots in the Yukon Territory surveys of which have been received from April 1, 1907, to March 31, 1908.—*Concluded.*

Lot No.	Area in Acres.	Surveyor.	Year of Survey.	Date of Approval.		Claimant.	Remarks.
88	51.02	"	1907..	Jan.	23, 1908..	A. C. Robertson <i>et al.</i> .....	Mineral Claim.
89	51.62	"	1907..	"	23, 1908..	" .....	"
90	18.03	"	1907..	"	23, 1908..	" .....	"
91	45.72	"	1907..	"	23, 1908..	" .....	"
92	51.65	"	1907..	"	"	J. Williams & A. La Rose....	"
93	51.65	"	1907..	*	"	" .....	"
94	51.65	"	1907..	Jan.	23, 1908..	" .....	"
95	51.54	"	1907..	"	23, 1908..	" .....	"
96	49.84	"	1907..	"	23, 1908..	J. P. Whitney.....	"
97	27.17	"	1907..	Feb.	26, 1908..	W. S. Thomas.....	"
98	122.42	"	1907..	*	"	J. Williams & A. La Rose....	"
99	145.01	"	1907..	*	"	" .....	"
100	144.35	"	1907..	*	"	" .....	"
101	159.03	"	1907..	*	"	" .....	"
102	158.35	"	1907..	*	"	" .....	"
103	32.80	"	1907..	Feb.	26, 1908..	W. S. Thomas.....	"
104	24.63	"	1907..	Jan.	23, 1908..	Clara L. Walters.....	"
105	44.05	"	1907..	"	22, 1908..	B. J. McGee.....	"
106	46.62	"	1907..	"	22, 1908..	W. J. Elmendorf.....	"
107	11.78	"	1907..	"	22, 1908..	" .....	"
108	51.65	"	1907..	"	23, 1908..	C. P. Seale.....	"
109	28.55	"	1907..	"	22, 1908..	Florence Young.....	"
142	33.61	N. A. Burwash..	1908..	*	"	A. B. Palmer.....	"

GROUP No. 6.

23	51.65	H. G. Dickson..	1907..	*	R. H. Chadwick.....	Mineral claim.
80	36.55	"	1907..	*	" .....	"

GROUP No. 10.

22	10.00	C. S. W. Barwell	1907..	Sept.	13, 1907..	S. Rowlinson.....	Surface.
23	160.00	"	1907..	"	13, 1907..	C. E. Miller <i>et al.</i> .....	"
24	160.00	"	1907..	"	13, 1907..	" .....	"
25	40.00	"	1907..	"	13, 1907..	Geo. Delion.....	"
26	120.00	"	1907..	Oct.	11, 1907..	A. B. Palmer.....	"

\* Not yet approved.



SESSIONAL PAPER No. 25b

## APPENDIX No. 4.

LIST of Miscellaneous surveys in the Yukon Territory, returns of which have been received from April 1, 1907, to March 31, 1908.

Year.	Surveyor.	Description of Survey.
1907.....	T. D. Green....	Base Line on Dago Gulch, a tributary of Hunker creek.
1907.....	H. G. Dickson..	" Burwash creek, a tributary of Kluane river.



## APPENDIX No. 5.

## STATEMENT of work executed in the office of the chief draughtsman.

Letters of instruction to surveyors.. . . . .	177
Progress sketches received and filed.. . . . .	1,002
Declarations of settlers received and filed.. . . . .	473
Plans received from surveyors.. . . . .	334
Field books received from surveyors.. . . . .	577
Timber reports received.. . . . .	56
Preliminary township plans prepared.. . . . .	369
Sketches made.. . . . .	1,352
Maps made.. . . . .	22
Tracings and miscellaneous plans made.. . . . .	154
Plans of Yukon lots received.. . . . .	76
Plans of miscellaneous Yukon surveys received.. . . . .	2
Tracings of Yukon survey plans made.. . . . .	87
Yukon lots reduced to 40 chains to 1 inch and plotted on group plans.. . . . .	96
Yukon traverses reduced to 40 chains to 1 inch and plotted on group plans.. . . . .	2
Returns of surveys examined—	
Township subdivision.. . . . .	362
Township outline.. . . . .	157
Road plans.. . . . .	233
Railway plans.. . . . .	112
Mineral claims.. . . . .	32
Timber berths.. . . . .	60
Correction and other miscellaneous surveys.. . . . .	55
Township plans compiled.. . . . .	604
Proofs of plans examined.. . . . .	539
Township plans printed.. . . . .	518
Townsites and settlements printed.. . . . .	5
Descriptions written.. . . . .	7
Pages of field notes copied.. . . . .	244
Traverse reductions made.. . . . .	28
Applications for various information dealt with.. . . . .	1,869
Fyles received and returned.. . . . .	1,980
Letters drafted.. . . . .	4,993
Books received from record office and used in connection with office work.. . . . .	4,870
Books returned to record office.. . . . .	5,254
Plans other than township plans received from record office and used in connection with office work.. . . . .	552
Plans returned to record office.. . . . .	572
Volumes of plans received from record office and used in con- nection with office work.. . . . .	78
Volumes of plans returned to record office.. . . . .	74
Books sent to record office to be placed on record.. . . . .	494
Plans other than township plans sent to record office to be placed on record.. . . . .	476



SESSIONAL PAPER No. 25b

APPENDIX No. 5—*Continued.*

Sectional maps (3 miles to 1 inch)—	
Revised.. . . . .	73
Reprinted.. . . . .	28
New sheets compiled.. . . . .	6
New sheets printed.. . . . .	4
New drawings of old worn out sheets.. . . . .	2
New tracings of old worn out sheets.. . . . .	7
Sectional maps (6 miles to 1 inch)—	
Reprinted.. . . . .	24
New sheets printed.. . . . .	3
Proofs of sectional sheets examined.. . . . .	110



APPENDIX No. 6.

List of new editions of sectional maps issued from April 1, 1907, to March 31, 1908.  
Scale 3 miles to an inch.

No.	Name.	No.	Name.	No.	Name.	No.	Name.
10	Port Moody .....	67	Maple Creek.....	215	Red Deer. ....	269	Pr. Albert S.
11	Yale.. .....	68	Swift Current.....	216	Sullivan Lake.....	*313	Brulé.
15	Lethbridge.....	111	Kamloops.....	*263	Jasper.....	314	St. Ann.
16	Milk River.....	164	Morley.....	264	Brazeau.....	319	Pr. Albert N.
17	Cypress.....	165	Rosebud.....	265	Peace Hills.....	*320	Carrot River.
19	Willowbunch.. .	168	The Elbow.....	266	Ribstone Creek.....	365	Victoria.
61	Lytton....	171	Duck Mountain.....	267	Battleford.....	366	Saddle Lake.
66	Medicine Hat.....	172	Fairford....	268	Carlton.....	*416	La Biche.

SCALE 6 MILES TO AN INCH.

10	Port Moody.. ....	66	Medicine Hat.....	111	Kamloops.....	314	St. Ann.
11	Yale.....	67	Maple Creek.....	165	Rosebud.....	317	Fort Pitt.
15	Lethbridge.....	68	Swift Current.....	171	Duck Mountain.....	318	Shell River.
16	Milk River.. ....	69	Moosejaw....	172	Fairford.....	319	Pr. Albert N.
17	Cypress... ..	71	Brandon.....	*263	Jasper.....	*320	Carrot River.
19	Willowbunch.. ....	72	Portage La Prairie..	268	Carlton.....	365	Victoria.
61	Lytton.....			269	Prince Albert S.....		
				*313	Brulé.....		

\* First edition.



## APPENDIX No. 7

STATEMENT of work executed in the Survey Records Office from April 1, 1907,  
to March 31, 1908.

Files received and dealt with.. . . .	10,466
Letters drafted.. . . .	4,405
Plans, tracings, &c., copied or compiled.. . . .	369
Statutory declarations copied or mailed.. . . .	506
Plans sent to agents, registrars, &c.. . . .	28,545
Pages of field notes copied.. . . .	2,348
Prints of plans received and stored.. . . .	110,785
Original plans received and recorded.. . . .	1,068
Original field notes received and recorded.. . . .	433
Letters written to agents .. . . .	1,300
Registered parcels mailed.. . . .	1,741

*Work done for Topographical Surveys Branch.*

Books searched for.. . . .	8,018
Books sent.. . . .	5,396
Books returned .. . . .	6,250
Plans searched for... . . . .	2,223
Plans sent.. . . .	1,520
Plans returned.. . . .	532
Volumes searched for .. . . .	134
Volumes sent.. . . .	77
Volumes returned.. . . .	75

*Work done for Patents Branch.*

Plans searched for.. . . .	812
Plans sent .. . . .	1,427
Plans returned .. . . .	924
Field notes searched for .. . . .	226
Field books sent.. . . .	57
Field books returned.. . . .	63

*Work done for other Branches.*

Plans searched for.. . . .	1,453
Plans sent.. . . .	1,427
Plans returned.. . . .	924
Field notes searched for.. . . .	266
Field notes sent.. . . .	240
Field notes returned.. . . .	244



## APPENDIX No. 8.

STATEMENT of work executed in the Photographic Office from April 1, 1907, to March 31, 1908.

## FOR THE DEPARTMENT OF THE INTERIOR.

—	3½ x 3½	4 x 5	5 x 7	8 x 10	10 x 12	11 x 14	16 x 18	18 x 20	24 x 30	30 x 36	36 x 42	42 x 48	Total.
Bromide prints.		133	435	38	27	758	38	82	36	34	18	8	1,607
Vandyke prints				2	4	17	39	51	49	7	15	12	196
Silver prints....		583	2,673	2									3,258
Lantern trans- parencies.....	86												86
Dry plate neg- atives.....		234	732										966
Wet plate neg- atives.....				89		91	703	185					1,068
Zinc transfers..						5		814					819
Total...	86	950	3,840	131	31	871	780	1,132	85	41	33	20	8,000

## FOR THE GEOLOGICAL SURVEY.

—	3½ x 3½	4 x 5	5 x 7	8 x 10	10 x 12	11 x 14	16 x 18	18 x 20	24 x 30	30 x 36	36 x 42	42 x 48	Total.
Bromide prints.				4		33							37
Silver prints....		52											52
Total		52		4		33							89



SESSIONAL PAPER No. 25b

## APPENDIX No. 9.

STATEMENT of work executed in the Lithographic Office from April 1, 1907, to March 31, 1908.

Month.	MAPS.		TOWNSHIPS.		FORMS.	
	No. of Jobs.	No. of Copies.	No. of Jobs.	No. of Copies.	No. of Jobs.	No. of Copies.
1907.						
April.....	6	12,400	50	10,000	6	3,450
May.....	9	8,500	40	8,000	8	9,000
June.....	4	925	39	7,800	5	2,025
July.....	19	40,650	32	6,400	5	12,550
August . .	2	650	58	11,600	4	1,600
September. . . . .	6	2,050	23	4,600	3	350
October. . . . .			63	12,600	12	9,490
November. . . . .	14	2,175	42	8,400	6	2,825
December.. . . .	8	3,025	45	9,000	3	600
1908.						
January.....	10	7,550	50	10,000	10	3,525
February.....	10	3,000	53	10,600	14	6,750
March.....	1	350	78	15,600	12	6,890
Total. . . . .	89	81,275	573	114,600	83	59,055

## Summary of work for the year.

	No. of Jobs.	No. of Copies.	No. of Impressions.	Cost.	Cost per map or form.
				\$ cts.	\$ cts.
Maps.....	89	81,275	185,035	2,363 63	26 55
Townships.....	573	114,600	250,820	4,361 57	7 60
Forms, &c.....	88	59,055	63,555	1,270 80	14 45
Total. . . . .	750	254,930	499,410	7,996 00	



## APPENDIX No. 10.

Names and duties of employees of the Topographical Surveys Branch at Ottawa.  
(Metcalf street, corner of Slater street).

Deville, E., D.T.S., LL.D., Surveyor General.

## CORRESPONDENCE AND ACCOUNTS.

Brady, M., secretary.

Hunter, R. H., accountant.

Wilkinson, Percy, assistant accountant.

Percival, Miss M. F., stenographer and typewriter.

Cullen, M. J., stenographer and typewriter.

Moran, J. F., stenographer and typewriter.

Lynch, F., stenographer and typewriter.

Williams, E. R., clerk.

Pegg, A., messenger.

Paquette, Albert, messenger.

## OFFICE OF CHIEF DRAUGHTSMAN.

Symes, P. B., chief draughtsman.

Shanks, T., B.A.Sc., D.L.S., assistant to chief draughtsman.

*First Division—Instructions and General Information*

Brown, T. E., B.A., in charge of division.

Weekes, M. B., B.A.Sc., D.L.S., O.L.S.

Umbach, J. E., Grad. S.P.S., D.L.S.

Barber, H. G., Grad. S.P.S., D.L.S.

Green, W. T., B.A., D.L.S.

Rice, F. W., Grad. School of Mining.

McRae, A. D., B.A., B.Sc.

Carroll, M. J., Grad. S.P.S.

Stewart, A. G., Grad. School of Mining.

Grant, A. W., B.A.

Belleau, J. A., D.L.S.

Dodge, G. B.

Sylvain, J.

Cram, A.

Rochon, E. C.

Burkholder, E. L.

McLaughlin, M. J.

Gaudry, G. A.

Grey, G. A.

*Second Division—Examination of Surveyors' Returns.*

Nash, T. S., Grad. S.P.S., D.L.S., in charge of division.

Henderson, F. D., Grad. S.P.S., D.L.S.

Burgess, E. L., Grad. S.P.S., D.L.S., O.L.S.



## SESSIONAL PAPER No. 25b

Dennis, E. M., B.Sc.  
Akins, J. R., B.Sc.  
Cumming, A. L., B.Sc.  
Elder, A. J., Grad. S.P.S., D.L.S.  
Hill, S. N., Grad. S.P.S.  
Elwell, W., Grad. S.P.S.  
Maynard, F.H., Grad. R.M.C.  
Day, H. S., B.Sc.  
Sutherland, H. E., B.Sc.  
Morrier, J. E., D.L.S.  
Davies, T. A., D.L.S.  
Kitto, F. H., D.L.S.  
McClennan, W. D.  
Roger, A.  
Clunn, T. H. G.  
Robertson, D. F.  
Spreckley, R. O.  
Goodday, Leonard  
Williamson, F. H. H.  
Webb, G. C.  
Wilding, C. H.  
Bray, R. P.  
Harrison, E. W.  
Ault, H. W.  
Macdonald, J. A.

*Third Division—Drawing Plans for Printing.*

Engler, Carl, B.A., D.L.S., in charge of division.  
May, J. E.  
O'Connell, J. R.  
Moule, W. J.  
Villeneuve, E. J.  
Helmer, J. D.  
Archambault, E.  
Tremblay, A.  
Hutton, J. B.  
Brown, A.  
Binks, C. B.  
Dawson, R. J.  
Holbrook, C. H.  
Watters, James.

*Fourth Division—British Columbia Surveys.*

Rowan-Legg, E. L., in charge of division.  
Carson, P. A., B.A., D.L.S.  
MacIlquham, W. L., B.Sc.  
Gillmore, E. T. B., Grad. R.M.C.  
Lawe, H., D.L.S.  
Morley, R. W.  
Weld, W. E.  
Wilson, E. D.



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*Fifth Division—Imperial building, Queen street—Mapping.*

Smith, Jacob, in charge of division.

Bégin, P. A.

Lepage, J. B.

Blanchet, A. E.

Davies, T. E. S.

Taggart, C. H.

Perrin, V.

Genest, P. F. X.

Bergin, W.

Davy, Eugene.

## OFFICE OF THE GEOGRAPHER.

(Woods building, Slater street.)

White, J., geographer.

Baine, H. E.

Chalifour, J. E.

Dumouchel, G. E.

Taché, H.

Darrach, M.

Wilson, H. W.

Akerlindh, A.

Anderson, W.

Blatchley, H. M.

Bennie, J.

Wood, C. G.

Craig, R. W.

Chandler, S.

Groulx, A.

Gagnon, A. S.

Inkster, F. B.

Blue, W.

Beveridge, James.

MacElligot, J. P.

Martin, Miss M. Perley.

Pigeon, Jules.

Waine, Mrs. D. E.

Merrifield, J. R.

## SURVEY RECORDS OFFICE.

(Canadian building, Slater street.)

Steers, C. J., clerk in charge.

Currie, P. W., B.A., B.Sc., D.L.S., assistant clerk in charge.

Surtees, W. S., draughtsman.

Sowter, T. W. E., draughtsman.

Smith, F. W., draughtsman.

Routh, C. F., draughtsman.

Ashton, A. W., draughtsman.

Lecourt, Eugène, draughtsman.

Moore, R. T., draughtsman.

Lambart, O. H., draughtsman and typewriter.

Belleau, Eugène, draughtsman.



SESSIONAL PAPER No. 25b

Yeilding, Miss A., typewriter.  
Mudie, J. M., draughtsman.  
Gillis, W. C., draughtsman.  
Landry, Narcisse, messenger.

LITHOGRAPHIC OFFICE.

(Metcalf street, corner of Slater street.)

Moody, A., foreman.  
Thicke, C., engraver and lithographer.  
Thicke, H., power press printer.  
Bergin, J., power press printer.  
Deslauriers, J. H., transferrer.  
Boyle, S., stone polisher.  
Gagnon, J., press feeder.

PHOTOGRAPHIC OFFICE.

(Metcalf street, corner of Slater street.)

Topley, H. N., photographer in charge.  
Carruthers, H. K., photo-lithographer and photo-engraver.  
Woodruff, J., photographer.  
Whitcomb, H. E., photographer.  
Morgan, W. E., photographer.  
Kilmartin, A., photographer.  
Devlin, A., photographer.  
Ouimet, Geo., photographer.

GEOGRAPHIC BOARD.

(Woods building, Slater street.)

Whitcher, A. H., D.L.S., secretary.



## APPENDIX No. 11.

List of Dominion Land Surveyors who have been supplied with Standard Measures.

Name.	Address.	Date of Appointment.	Remarks.
Austin, G. F. ....	Dewdney, Alta. ....	April 14, 1872	
Aylen, J. ....	Aylmer, Que. ....	May, 29, 1885	
Aylsworth, C. F. ....	Madoc, Ont. ....	" 17, 1886	
Baker, J. C. ....	Vermilion, Alta. ....	" 18, 1906	
Barwell, C. S. W. ....	Dawson, Yukon Territory ....	Aug. 21, 1894	
Bayne, G. A. ....	Winnipeg, Man. ....	April 14, 1872	
Beatty, D. ....	Parry Sound, Ont. ....	" 14, 1872	
Beatty, W. ....	Delta, Ont. ....	" 14, 1872	
Belanger, P. R. A. ....	Ottawa, Ont. ....	May 17, 1880	Inspector of Surveys, Topographical Surveys Branch, Dept. of Interior.
Belleau, J. A. ....	" .....	" 15, 1883	Topographical Surveys Branch, Dept. of Interior.
Bigger, C. A. ....	" .....	Mar. 30, 1882	Astronomer, Dept. of Interior.
Bolton, L. ....	Listowell, Ont. ....	April 14, 1872	
Boswell, E. J. ....	Winnipeg, Man. ....	Feb. 18, 1903	
Bourgeault, A. ....	St. Jean Port Joli, Que. ....	Mar. 29, 1883	
Bourgault, C. E. ....	" .....	Feb. 21, 1888	
Bourget, C. A. ....	Levis, Que. ....	May 14, 1884	
Bowman, H. J. ....	Berlin, Ont. ....	Feb. 16, 1888	
Brabazon, A. J. ....	Ottawa, Ont. ....	May 12, 1882	
Brady, J. ....	Golden, B.C. ....	April 14, 1872	
Bray, S. ....	Ottawa, Ont. ....	Nov. 14, 1883	Dept. of Indian Affairs.
Bray, E. ....	Oakville, Ont. ....	April 14, 1872	
Bray, L. T. ....	Amherstburg, Ont. ....	Feb. 18, 1903	
Bridgland, M. P. ....	Calgary, Alta. ....	Mar. 10, 1905	Topog. Surveys Branch, Dept. of Interior.
Brownlee, J. H. ....	Victoria, B.C. ....	Apr. 15, 1887	
Burke, W. ....	Minnedosa, Manitoba. ....	" 14, 1872	
Burnet, H. ....	Victoria, B.C. ....	June 22, 1885	
Burwash, N. A. ....	Whitehorse, Yukon Territory	Mar. 6, 1907	
Burwell, H. M. ....	Vancouver, B.C. ....	Feb. 17, 1887	
Carbert, J. A. ....	Medicine Hat, Alta. ....	May 12, 1880	
Carpenter, H. S. ....	Regina, Sask. ....	Feb. 20, 1901	Dept. of Public Works for Saskatchewan.
Carroll, C. ....	Prince Albert, Sask. ....	April 14, 1872	
Carson, P. A. ....	Ottawa, Ont. ....	Feb. 22, 1906	Topog. Surveys Branch, Dept. of Interior.
Cautley, R. H. ....	Edmonton, Alta. ....	May 1, 1905	
Cautley, R. W. ....	" .....	Sept. 2, 1896	
Cavana, A. G. ....	Orillia, Ont. ....	Nov. 16, 1876	
Charlesworth, L. C. ....	Edmonton, Alta. ....	Feb. 27, 1903	Dept. of Public Works, Alberta.
Chilver, C. A. ....	Walkerville, Ont. ....	" 22, 1907	
Christie, W. ....	Chesley, Ont. ....	Mar. 22, 1906	
Coates, P. C. ....	Golden, B.C. ....	Apr 19, 1907	
Cleveland, E. A. ....	Vancouver, B.C. ....	June 27, 1899	
Côté, J. A. ....	Quebec, Que. ....	May 14, 1884	
Côté, J. L. ....	Edmonton, Alta. ....	Mar. 21, 1890	
Cotton, A. F. ....	New Westminster, B.C. ....	May 11, 1880	
Craig, J. D. ....	Ottawa, Ont. ....	Feb. 24, 1902	Boundary Surveys, Dept of Int.
Cummings, J. G. ....	Calgary, Alta. ....	" 17, 1904	
Dalton, J. J. ....	Weston, Ont. ....	April 17, 1879	Dominion Topographical Surveyor.
Davies, T. A. ....	Ottawa, Ont. ....	Feb. 22, 1906	
Deans, W. J. ....	Brandon, Man. ....	May 13, 1886	
Dennis, J. S. ....	Calgary, Alta. ....	Nov. 19, 1877	Dominion Topographical Surveyor, Inspector of Irrigation and British Columbia Land Commissioner, C.P.R.



SESSIONAL PAPER No. 25b

## APPENDIX No. 11.

LIST of Dominion Land Surveyors who have been supplied with Standard Measures.—*Continued.*

Name.	Address.	Date of Appointment.	Remarks.
Denny, H. C.	"	April 1, 1882	
Dickson, H. G.	Whitehorse, Yukon Territory.	May 19, 1889	
Dickson, J.	Fenelon Falls, Ont.	April 14, 1872	
Dobie, J. S.	Regina, Sask.	Mar. 22, 1906	Dept. of Public Works for Saskatchewan.
Doupe, J.	Winnipeg, Man.	April 14, 1872	
Doupe, J. L.	"	Oct. 6, 1888	Asst. Land Commissioner, C. P.R.
Drewry, W. S.	New Denver, B.C.	Nov. 14, 1883	
Driscoll, A.	Edmonton, Alta.	Feb. 23, 1887	
Drummond, T.	Montreal, Que.	June 24, 1878	Dominion Topographical Surveyor.
Ducker, W. A.	Winnipeg, Man.	Mar. 30, 1883	Swamp Land Commissioner.
Dumais, P. T. C.	Hull, Que.	" 29, 1882	
Edwards, Geo.	Ponoka, Alta.	April 14, 1872	
Ellacott, C. H.	Regina, Sask.	Feb. 22, 1899	
Empey, J. M.	Calgary, Alta.	" 23, 1905	
Fairchild, C. C.	Brantford, Ont.	" 20, 1901	
Farncomb, A. E.	Red Deer, Alta.	Mar. 12, 1902	
Fawcett, T.	Niagara Falls, Ont.	Nov. 18, 1876	Dominion Topographical Surv.
Fawcett, A.	Gravenhurst, Ont.	Feb. 22, 1893	
Fontaine, L. E.	Levis, Que.	Aug. 13, 1892	
Foster, F. L.	Toronto, Ont.	April 14, 1872	
Francis, J.	Poplar Point, Man.	June 17, 1875	
Garden, J. F.	Vancouver, B. C.	May 13, 1880	
Garden, G. H.	Lethbridge, Alta.	April 14, 1872	
Garden, C.	Winnipeg, Man.	" 14, 1872	
Garner, A. C.	South Qu'Appelle, Sask.	May 27, 1907	
Gauvreau, L. P.	Riviere du Loup, Que.	April 14, 1872	
Gibbon, J.	Dawson, Yukon Territory.	Feb. 12, 1891	
Gordon, M. L.	Vancouver, B.C.	" 18, 1904	
Gordon, R. J.	Stirling, Alta.	Mar. 12, 1902	
Gore, T. S.	Victoria, B. C.	April 19, 1879	
Green, T. D.	Dawson, Yukon Territory.	May 19, 1884	
Green, W. T.	Ottawa, Ont.	Feb. 22, 1907	
Grover, G. A.	Norwood, Ont.	Feb. 18, 1904	
Harris, J. W.	Winnipeg, Man.	April 14, 1872	City Surveyor, Winnipeg.
Harvey, C.	Indian Head, Sask.	Feb. 17, 1904	
Hawkins, A. H.	Listowel, Ont.	Mar. 6, 1906	
Heathcott, R. V.	Edmonton, Alta.	May 13, 1907	
Henderson, W.	Chilliwack, B.C.	Nov. 17, 1883	
Holcroft, H. S.	Toronto, Ont.	Feb. 18, 1903	
Hopkins, M. W.	Edmonton, Alta.	" 20, 1901	
Hubbell, E. W.	Ottawa, Ont.	May 19, 1884	Topographical Surveys Branch Dept. of Interior, President of D.L.S. Association.
Irwin, J. M.	Kenora, Ont.	April 14, 1872	
James, S.	Toronto, Ont.	April 14, 1872	
Jephson, R. J.	Winnipeg, Man.	May 12, 1880	
Johnson, A. W.	Kamloops, B.C.	Mar. 12, 1902	
King, W. F.	Ottawa, Ont.	Nov. 21, 1876	Dominion Topographical Surveyor, Chief Astronomer, Dept. of Interior.
Kimpe, M.	Edmonton, Alta.	May 13, 1907	
Kirk, J. A.	Revelstoke, B.C.	May 11, 1880	
Klotz, O. J.	Ottawa, Ont.	Nov. 19, 1877	Dominion Topographical Surveyor, Astronomer, Dept. of the Interior.
Knight, R. H.	Edmonton, Alta.	Feb. 18, 1904	
Latimer, F. H.	Detroit, Mich.	" 13, 1885	
Laurie, R. C.	Battleford, Sask.	April 27, 1883	
Lawe, H.	Ottawa, Ont.	" 14, 1872	
Lemoine, C. E.	Quebec, Que.	Mar. 31, 1882	
Lendrum, R. W.	Strathcona, Alta.	May 15, 1880	



APPENDIX No. 11.

LIST of Dominion Land Surveyors who have been supplied with Standard Measures.—*Continued.*

Name.	Address.	Date of Appointment.	Remarks.
Lonergan, G. J.....	Buckingham, Que .....	Feb. 28, 1901	Inspector of Surveys, Topographical Surveys Branch, Dept. of Interior.
Lumsden, H. D.....	Ottawa, Ont.....	April 14, 1872	Chief Engineer Trans. Ry.
MacPherson, C. W. ....	Dawson, Yukon Territory .....	Mar. 7, 1900	Director of Surveys, Y.T.
Magrath, C. A.....	Lethbridge, Alta.....	Nov. 16, 1881	Dominion Topographical Surveyor, Land Commissioner, Alberta Railway and Coal Co.
Malcolm, L.....	Blenheim, Ont .....	April 14, 1872	
Meadows, W. W. ....	Maple Creek, Sask.....	Feb. 23, 1905	District Surveyor and Town Engineer.
Miles, C. F.....	Toronto, Ont.....	April 14, 1872	Inspector of Surveys, Topographical Surveys Branch, Dept. of Interior.
Moberly, H. K.....	Innisfail, Alta .....	Feb. 27, 1903	
Molloy, J.....	Winnipeg, Man.....	April 14, 1872	
Montgomery, R. H.....	Prince Albert, Sask .....	Feb. 23, 1905	
Moore, H. H.....	Calgary, Alta .....	Feb. 17, 1904	
McArthur, J. J .....	Ottawa, Ont.....	" 17, 1879	
McColl, G. B.....	Winnipeg, Man.....	Mar. 20, 1907	
McFadden, M.....	Neepawa, Man. ....	Feb. 14, 1872	
McFarlane, W. G.....	Toronto, Ont.....	May 19, 1905	
McFee, A.....	Innisfail, Alta .....	Feb. 19, 1879	
McGrandle, H .....	Wetaskiwin, Alta.....	May 30, 1883	
McKenna, J. J.....	Dublin, Ont.....	April 14, 1872	
McKenzie, J.....	New Westminster, B.C. ....	Nov. 18, 1888	Dominion Lands Agent, New Westminster.
McLean, J. K.....	Ottawa, Ont.....	April 1, 1882	Dept. of Indian Affairs.
MacLennan, A. L.....	Toronto, Ont.....	Feb. 23, 1905	
McMillan, G.....	Ottawa, Ont.....	" 22, 1906	Inspector of Surveys, Topographical Surveys Branch, Dept. of Interior.
McPherson, A. J.. ..	Dawson, Yukon Territory.. ..	" 21, 1901	
McPhillips, G .....	Windsor, Ont.....	June 17, 1875	
McVittie, A. W.....	Blairmore, Alta.....	Mar. 30, 1882	
Nash, T. S .....	Ottawa, Ont.....	Feb. 18, 1904	Topographical Surveys Branch, Dept. of Interior, secretary-treasurer of the D.L.S. Assn.
Ogilvie, W.....	Ottawa, Ont.....	April 14, 1872	
O'Hara, W. F.....	Ottawa, Ont.....	Feb. 19, 1895	
Ord, L. R.....	Winnipeg, Man.....	April 1, 1882	
Parsons, J. L. R.....	Regina, Sask.....	Feb. 23, 1905	
Patrick, A. P.....	Calgary, Alta.....	Nov. 19, 1877	Dominion Topographical Surveyor.
Pearce, W.....	Calgary, Alta.....	May 10, 1880	
Phillips, E. H.....	Saskatoon, Sask.....	Feb. 24, 1902	Dept. of Public Works for Saskatchewan.
Ponton, A. W.....	Macleod, Alta.....	May 18, 1881	
Proudfoot, H. B.....	Saskatoon, Sask.....	Mar. 28, 1882	
Rainboth, E. J.....	Ottawa, Ont .....	May 19, 1881	
Rainboth, G. C.....	Aylmer, Que.....	April 14, 1872	Boundary Surveys, Dept. Interior.
Reid, J. L.....	Ottawa, Ont.....	" 14, 1872	Dept. of Indian Affairs.
Reilly, W. R.....	Regina, Sask .....	Nov. 17, 1881	
Richard, J. F. ....	Ste Anne de la Pocatière, Que..	May 13, 1882	
Rinfret, E.....	Montreal, Que.....	Feb. 20, 1900	
Ritchie, J. F.....	Nelson, B.C.....	Jan. 7, 1889	
Robertson, H. H.....	Montmagny, Que.....	April 14, 1872	
Roberts, S. A.....	Victoria, B.C.....	May 16, 1885	
Roberts, V. M.....	Sturgeon Falls, Ont .....	" 17, 1886	
Robinson, F. J.....	Regina, Sask.....	Feb. 22, 1906	Dept. of Public Works for Saskatchewan.
Rombough, M. B.....	Morden, Man.....	April 14, 1872	



SESSIONAL PAPER No. 25b

## APPENDIX No. 11.

LIST of Dominion Land Surveyors who have been supplied with Standard Measures.—*Concluded.*

Name.	Address.	Date of Appointment.	Remarks.
Rorke, L. V . . . . .	Toronto, Ont. . . . .	Aug. 13, 1891	
Ross, G. . . . .	Welland, Ont. . . . .	Nov. 21, 1882	
Ross, J. E. . . . .	Kamloops, B.C. . . . .	Feb. 12, 1901	
Roy, G. P. . . . .	Quebec, Que. . . . .	Nov. 17, 1881	
Saint Cyr, J. B. . . . .	Ste. Anne de la Pérade, Que . . .	Feb. 17, 1887	
Saint Cyr, A. . . . .	Ottawa, Ont. . . . .	" 17, 1887	
Saunders, B. J. . . . .	Edmonton, Alta. . . . .	Nov. 16, 1884	
Seager, E. . . . .	Kenora, Ont. . . . .	April 14, 1872	
Selby, H. W. . . . .	Toronto, Ont. . . . .	Nov. 15, 1882	
Seymour, H. L. . . . .	Edmonton, Alta. . . . .	Feb. 22, 1906	
Sewell, H. de Q. . . . .	Toronto, Ont. . . . .	May 16, 1885	
Shaw, C. A. E. . . . .	Victoria, B.C. . . . .	" 10, 1880	
Shepley, J. D. . . . .	Leamington, Ont. . . . .	Mar. 12, 1906	
Smith, C. C. . . . .	Brampton, Ont. . . . .	Feb. 22, 1906	
Speight, Thos. . . . .	Toronto, Ont. . . . .	Nov. 16, 1882	
Stacey, A. G. . . . .	Ottawa, Ont. . . . .	Feb. 22, 1906	
Starkey, S. M. . . . .	Starkey's P.O., N.S. . . . .	April 14, 1872	
Stewart, G. A. . . . .	Calgary, Alta. . . . .	" 14, 1872	
Stewart, L. B. . . . .	Toronto, Ont. . . . .	Nov. 22, 1882	Dominion Topographical Surveyor, Professor of Surveying, School of Practical Science.
Stewart, E. . . . .	Ottawa, Ont. . . . .	April 14, 1872	
Stewart, W. M. . . . .	Hamilton, Ont. . . . .	June 26, 1907	
Talbot, A. C. . . . .	Calgary, Alta. . . . .	May 13, 1880	
Taylor, A. . . . .	Winnipeg, Man. . . . .	June 9, 1904	
Teasdale, C. M. . . . .	Concord, Ont. . . . .	Mar. 9, 1906	
Thompson, W. T. . . . .	Fort Qu'Appelle, Sask. . . . .	Nov. 19, 1877	Dominion Topographical Surveyor.
Tracy, T. H. . . . .	Vancouver, B.C. . . . .	April 14, 1872	City Engineer, Vancouver.
Tremblay, A. J. . . . .	Les Eboulements, Que . . . . .	Feb. 18, 1890	
Towle, C. E. . . . .	Magog, Que. . . . .	April 14, 1872	
Turnbull, T. . . . .	Winnipeg, Man. . . . .	Mar. 29, 1882	
Tyrrell, J. W. . . . .	Hamilton, Ont. . . . .	Feb. 16, 1887	
Vaughan, J. W. . . . .	Vancouver, B.C. . . . .	June 11, 1878	
Vicars, J. . . . .	Kamloops, B.C. . . . .	May 17, 1886	
Waddell, W. H. . . . .	Hamilton, Ont. . . . .	Mar. 25, 1907	
Waldron, J. . . . .	Moosejaw, Sask. . . . .	April 2, 1907	
Walker, E. W. . . . .	Regina, Sask. . . . .	Mar. 27, 1907	Dept. of Public Works for Saskatchewan.
Wallace, J. N. . . . .	Calgary, Alta. . . . .	Feb. 20, 1900	
Warren, J. . . . .	Walkerton, Ont. . . . .	April 14, 1872	
Watt, G. H. . . . .	Ottawa, Ont. . . . .	Feb. 24, 1902	
Weekes, A. S. . . . .	Clinton, Ont. . . . .	" 11, 1892	
Weekes, M. B. . . . .	Ottawa, Ont. . . . .	" 18, 1903	
Wheeler, A. O. . . . .	Calgary, Alta. . . . .	Nov. 21, 1882	Topographer of the Department of the Interior.
White-Fraser, G. W. R. . . . .	Ottawa, Ont. . . . .	Feb. 21, 1888	Dominion Topographical Surveyor.
Wiggins, T. H. . . . .	Regina, Sask. . . . .	" 18, 1886	
Wilkins, F. W. . . . .	Norwood, Ont. . . . .	May 18, 1881	Dominion Topographical Surveyor.
Wilkinson, W. D. . . . .	Toronto, Ont. . . . .	Feb. 22, 1893	
Woods, J. E. . . . .	Frank, Alta. . . . .	Nov. 14, 1885	
Young, W. B. . . . .	Winnipeg, Man. . . . .	Mar. 25, 1905	
Young, W. H. . . . .	Lethbridge, Alta. . . . .	May 16, 1907	



## APPENDIX No. 12.

## EXAMINATION PAPERS OF THE BOARD OF EXAMINERS FOR DOMINION LAND SURVEYORS.

## EXAMINATION FOR ADMISSION AS ARTICLED PUPIL—FULL PRELIMINARY.

## XXXI.

*February 11 to 14, 1908.*

## PENMANSHIP AND ORTHOGRAPHY.

Write out correctly the following:

The propetty witch sault possesses of preszerving annimle substaineses from pewtrifaeshun is reezolved by Liebig into too more jennereel lause, the strong atraeshun of sault for watter, and the nessessity of the presents of watter as a condishon of pewtrefashun. The interméadiet fennomennon witch is interpollated betwean the remoat caws and the efekt can hear be not nearly infered but sean; for it is a fammilyer fakt that flesh uppon witch sault has bin throne is speadely fownd swimming in bryne.

Wun has, two a sertin exstent, a powwer to awlter his karaktar. Its being in the ultimmet ressort, fourmd for him, is not inkoncistent with its beeing, in part, fourmd by him as wun of the intermeadget ajence. His karektar is fourmd buy his serkumstanzes (inklewding among theas his partikkeller orgenisashun), but his owen desyer to mold it in a partikkeller weigh, is one of thows sercumstanzes, and buy no menes the leest inflewenshel. We kannut, indede dirrektlie wil to bee diferant from wot wee arr. But neether did thows hoo arr supowd to have fourmd ower karaktres, dyrrektlie wil that we shoold bee wot wee arr. There wil hadd no dyrekt powwer exept owar there owen axions. They maid us wot they did maike us, buy nott the end, butt the rekwisit menes; and we, wen ower habbits are not two invetteret, can, by simmillarly wiling the rekwisit menes, maike owerselfs diferant. If they cood plaice us under the inflewents of sertin serkumstanzes, we, in lyke manor, can plaice owerselfs under the inflewents of other serkumstanzes. Wee arr exaktlie as kaipabel of maiking ower owen karrakter, *if we wil*, as othars arr of maiking it four uss.



SESSIONAL PAPER No. 25b

ARITHMETIC AND LOGARITHMS.

Marks.

(Time, 3 hours.)

1. Find the H.C.F. of 126025 and 40115; and of 12321 and 54345. 12
2. Find the Least Common Multiple of 50, 338, 675, 702 and 975. 12
3. How long would a column of men, extending 3420 feet in length, take to march through a street a mile long at the rate of 58 paces a minute, each pace being 30 inches? 12
4. Find the square root of 3 to seven places of decimals; and the cube root of 27054.036008. 16
5. If  $\log \sin a = 9.2873193$   
 $\log \tan b = 1.7854321$   
 $\log \cos c = 8.9583428$   
 Find  $a$ ,  $b$ , and  $c$  and the angle whose tangent is  $\tan b \cos c$ .  
 If, further,  $\log \tan d = 1.7854321$ , find  $b + d$ . 16
6. Find from the Tables,  
 $\log 23.487$ ,  
 $\log .023487$ ,  
 $\log \sec 97^\circ 23' 54''$   
 $\log \sin 118^\circ 23' 37''.3$  16
7. Find by logarithms the value of  
 $(93.285)^{\frac{2}{3}} \times (0.85)^{-\frac{4}{5}} \times (.0035)^{\frac{1}{2}} \div (107.34)^{\frac{5}{8}}$  16

ALGEBRA.

(Time, 3 hours.)

Marks.

1. Reduce to its lowest terms  

$$\frac{2a^4 + 3a^2x - 9a^2x^2}{6a^4x - 17a^3x^2 + 14a^2x^3 - 3ax^4}$$
 12
2. Find the least common multiple of  
 $6(a^2 - b^2)(a - b)^3$ ,  $9(a^4 - b^4)(a - b)^2$  and  $12(a^2 - b^2)^3$ . 13
3. Simplify :  

$$\left\{ \frac{x^2 + y^2}{x^2 - y^2} - \frac{x^2 - y^2}{x^2 + y^2} \right\} \div \left\{ \frac{x + y}{x - y} - \frac{x - y}{x + y} \right\}$$
 15
4. A party were to divide their expenses equally. Had there been three persons more and each paid 5 cents more, the bill would have been \$3.75 more; but if there had been 10 persons less, and each had paid 7 cents less, it would have been \$9.56 less. How many persons were there and how much did each pay? 15



	Marks.
5. Solve the simultaneous equations : $\begin{aligned}x + y + z &= a + b + c \\bx + cy + az &= cx + ay + bz \\&= ab + bc + ca\end{aligned}$	15
6. Solve the equations: $2 \left( x^{\frac{1}{n}} + x^{-\frac{1}{n}} \right) = 5$ $(x^2 + a) (x + b) = ab$	15
7. Divide 40 into two such parts that the sum of their squares shall be 818.	15

PLANE GEOMETRY.

FIRST PAPER.

Marks.

(Time, 3 hours.)

- |   |    |
|---|----|
| 1. What is the difference between an axiom and a postulate? What is meant by 'reductio ad absurdum' ?   | 12 |
| 2. If two triangles have two sides of the one equal to two sides of the other, each to each, and also the angles included by the equal sides equal, the triangles are equal in all respects.  | 12 |
| 3. In what cases does equality of three of the six parts (three sides, three angles) each to each in two triangles, involve equality of the triangles?  | 12 |
| 4. All the exterior angles of any rectilinear figure, made by producing the sides successively in the same direction, are together equal to four right angles?  | 12 |
| 5. The sum of the angles of a square is equal to four right angles. Is the converse true? If not, why not?  | 13 |
| 6. If a straight line be bisected and produced to any point, the square on the whole line thus produced, and the square on the part of it produced, are together double of the square on half the line bisected, and of the square on the line made up of the half and the part produced. | 13 |
| 7. What algebraic proposition corresponds to the proposition in Question 6? State the geometric proposition corresponding to the algebraic one:<br>$(a + b) (a - b) + b^2 = a^2.$   | 13 |
| 8. Wherein is a geometrical proof of the properties of squares or rectangles with relation to their areas, more complete than an algebraic one?   | 13 |



SESSIONAL PAPER No. 25b

## PLANE GEOMETRY.

## SECOND PAPER.

Marks.

*(Time, 3 hours.)*

- |   |    |
|---|----|
| 9. Describe a square that shall be equal to a given rectilineal figure.   | 12 |
| 10. If in a circle two straight lines cut one another, which do not both pass through the centre, they do not bisect each other.  | 12 |
| 11. The opposite angles of any quadrilateral figure inscribed in a circle, are together equal to two right angles.  | 12 |
| 12. From a given circle cut off a segment which shall contain an angle equal to a given rectilineal angle.  | 12 |
| 13. To describe a circle about a given triangle.  | 13 |
| 14. What is meant by incommensurable magnitudes? Give a geometrical instance of incommensurability.   | 13 |
| 15. If an angle of a triangle be bisected by a straight line which cuts the opposite side, the segments into which this side is divided are in the same ratio as the other sides of the triangle; and conversely. | 13 |
| 16. In equal circles, angles, whether at the centres or circumferences have the same ratio which the arcs on which they stand have to one another; so also have the sectors.                                      | 13 |

## PLANE TRIGONOMETRY.

Marks.

*(Time, 3 hours.)*

- |  |    |
|--|----|
| 1. Deduce the expression for the area of a triangle in terms of its sides.   | 16 |
| 2. Prove that<br>$\sin (A + B) \sin (A - B) = \sin^2 A - \sin^2 B,$ and that<br>$\cos (A + B) \cos (A - B) = \cos^2 A - \sin^2 B.$ | 16 |
| 3. Given<br>$a = 35.3, b = 54.7, A = 33^\circ 25'$<br>solve the triangle.  | 17 |
| 4. Given<br>$b = 17.34, c = 29.85, A = 125^\circ 43'$<br>find $a$ . (Do not solve by natural trigonometric functions.)             | 17 |
| 5. Given<br>$A = 25^\circ 33', B = 117^\circ 08'; a = 125.33,$<br>find $c$ .   | 17 |
| 6. Given<br>$a = 23.5, b = 37.7, c = 31.2,$<br>find the angles.  | 17 |



SPHERICAL TRIGONOMETRY.

	Marks.
<i>(Time, 3 hours.)</i>	
1. State Napier's rules for the solution of right-angled spherical triangles. Deduce similar rules for the solution of triangles in which one side is a quadrant.	20
2. Given $c = 145^\circ$ , $a = 25^\circ$ , $C = 90^\circ$ ; solve the triangle.	20
3. Given $b = 123^\circ 15'$ , $c = 135^\circ 10'$ , $A = 15^\circ 27'$ ; find $a$ .	20
4. Given $B = 140^\circ 10'$ , $C = 55^\circ 42'$ , $a = 63^\circ 26'$ ; find $A$ .	20
5. Given $A = 125^\circ$ , $B = 135^\circ$ , $C = 85^\circ$ ; find $a$ .	20

NOTE.—Do not use natural trigonometric functions in the solution of triangles.

MENSURATION.

	Marks.
<i>(Time, 3 hours.)</i>	
1. The sides of a triangular field are 3.54, 12.62 and 11.38 chains. Find the area in acres.	14
2. The perimeter of a field which has the form of a triangle similar to that in question 1 is 41.31 chains. What is its area?	14
3. What fraction of the earth's surface lies between latitudes $50^\circ$ and $60^\circ$ , and between longitudes $90^\circ$ and $120^\circ$ ?	14
4. On a certain map it is found that an area of 16,000 acres is represented by an area of 6.25 square inches. Determine the scale of the map in miles to the inch.	14
5. A right circular cylinder and a right circular cone stand on equal bases and are of the same altitude, the altitude being equal to the length of a diameter of either base. Find the ratio ( $a$ ) of the curved surfaces; ( $b$ ) of the whole surfaces of the cone and cylinder.	15
6. A cylindric tube 8 feet long and 2 feet 6 inches in diameter is closed at each end by a hemisphere. Find the area of the whole external surface.	15
7. The area of a field determined by chain measurement is afterwards found to be greater than it should be by one-fortieth part. What was the true length of the chain with which the first measurement was made?	14

EXAMINATION FOR ADMISSION AS ARTICLED PUPIL—LIMITED PRELIMINARY.

XIX.

February 11, 1903.

FIRST PAPER.

	Marks.
<i>(Time, 3 hours.)</i>	
1. Penmanship and Orthography. (Same as in the Full Preliminary Examination.)	<div>50</div> <div>200</div>



SESSIONAL PAPER No. 25b

	Marks.
2. Given $\log 1.944 = 0.28869627$ and $\log 1.728 = 0.23754373$ find the logarithms of 45 and 75.	50
3. Two travellers $A$ and $B$ set out at the same time from two places, $P$ and $Q$ , and travel so as to meet. When they meet it is found that $A$ has travelled 30 miles more than $B$ , and that it will take $A$ and $B$ 4 days and 9 days respectively to complete their journeys. Find the distance between $P$ and $Q$ .	50
4. Find the value of $\frac{\sqrt{a+bx} + \sqrt{a-bx}}{\sqrt{a+bx} - \sqrt{a-bx}}$ when $x = \frac{2ac}{b(1+c^2)}$	50
5. If a quadrilateral figure is bisected by one diagonal, the second diagonal is bisected by the first.	50
6. From the formula $c^2 = a^2 + b^2 - 2ab \cos C$ , and the analogous formulæ $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$	50
7. Prove that $(\cos A + \cos B)^2 + (\sin A + \sin B)^2 = 4 \cos^2 \frac{1}{2} (A + B)$ .	50
8. Similar triangles are to one another as the squares on their homologous sides.	50

SECOND PAPER.

(Time, 3 hours.)

	Marks.
9. Two chimneys are of equal height. A person standing between them in the straight line joining their bases observes the elevation of the nearer one to him to be $60^\circ$ . After walking 80 feet in a direction at right angles to the straight line joining their bases, he observes the elevations of the two to be $45^\circ$ and $30^\circ$ . Find their height, and the distance between them.	50
10. If the surface areas of a sphere, a cube and a regular tetrahedron are equal to one another, find the ratios of the diameter of the sphere, to the side of the cube and the edge of the tetrahedron.	50
11. Prove that the straight line bisecting an angle of a triangle, either internally or externally, divides the opposite side into parts which are in the same ratio as the other sides of the triangle.	50
12. Apply the preceding proposition to find the locus of a point whose distances from two given points are in a given ratio.	50
13. Given $b = 99^\circ 41'$ ; $c = 100^\circ 50'$ ; $A = 65^\circ 33'$ , find $a$ . (Do not use natural trigonometric functions.)	50
14. Given $c = 75^\circ 31'$ ; $a = 90^\circ$ ; $B = 30^\circ 53'$ , find the other parts.	50
15. Find the value of $\left(\frac{23}{31}\right)^{\frac{3}{4}} + \left(\frac{13}{17}\right)^{-\frac{4}{5}} + \left(\frac{3}{4}\right)^{\frac{2}{3}} - \left(\frac{28}{39}\right)^{\frac{1}{12}}$	50



FINAL EXAMINATION FOR DOMINION LAND SURVEYOR.

XXXIX.

(February 11 to 18, 1908.)

PENMANSHIP AND ORTHOGRAPHY.

Marks.  
\_\_\_\_\_

(Time, 3 hours.)

The same paper is used as in the full preliminary examination.

{ 50  
  200

ALGEBRA.

Marks.  
\_\_\_\_\_

(Time, 3 hours.)

1. Find the G. C. M. of  $2x^5 - 11x^2 - 9$  and  $4x^5 + 11x^4 + 81$ ;  
and the L. C. M. of  $x^3 - 6x^2 + 11x - 6$ ,  $x^3 - 9x^2 + 26x - 24$ ,  
and  $x^3 - 8x^2 + 19x - 12$ .

10
2. Simplify  $\frac{m^2 + n^2}{\frac{\frac{1}{n} - m}{1} - \frac{1}{m}} \left( \frac{m^2 - n^2}{m^3 + n^3} \right)$ ;  
and  $\frac{a}{b + \frac{c}{d + \frac{e}{f}}}$ .

10
3. Solve  $\left( \frac{x - a}{x + b} \right)^3 = \frac{x - 2a - b}{x + a + 2b}$ ;  
and  $4.8x - \frac{.72x - .05}{.5} = 1.6x + 8.9$ 

10
4. Two persons,  $A$  and  $B$ , could finish a work in  $m$  days; they worked together  $n$  days when  $A$  was called off and  $B$  finished it in  $p$  days. In what time could each do it?

10
5. Solve the simultaneous equations:  
 $x + y + z = a + b + c,$   
 $bx + cy + az = cx + ay + bz = ab + bc + ca.$ 

10
6. Show that the G. C. M. of two quantities is the G. C. M. of their common measures.

10
7. Solve  $x^{-1} + x^{-\frac{1}{2}} = 6,$   
and  $x + \sqrt{5x + 10} = 8.$ 

10
8. Find that number whose square added to its cube is nine times the next highest number.

10
9. What are eggs a dozen when two more in 24 cents worth lowers the price two cents per dozen?

10
10. Divide a given line into two parts such that twice the square on one part may be equal to the rectangle contained by the whole line and the other part.

10



SESSIONAL PAPER No. 25b

## PLANE GEOMETRY.

*(Time, 3 hours.)*

	Marks.
1. Describe a circle about a given triangle.	18
2. Prove that the perimeter of a triangle is less than the perimeter of any triangle which is drawn completely surrounding it.	18
3. Construct a rectangle equal to the sum of two given triangles.	19
4. In a triangle, $BAC$ is the greatest angle. Prove that if a point $D$ be taken in $AB$ and a point $E$ in $AC$ , $DE$ is less than $BC$ .	19
5. Construct geometrically $a(a-x) = x^2$ where $a$ represents the length of a line.	19
6. If two chords of a circle when produced intersect at a point without the circle, the rectangle contained by the segments of one chord is equal to the rectangle contained by the segments of the other chord.	19
7. If one pair of opposite sides of a quadrilateral inscribed in a circle intersect at a fixed point, the other pair of opposite sides intersect on a fixed straight line.	19
8. If an angle of a triangle be bisected internally or externally by a straight line which cuts the opposite side, or that side produced, the ratio of the segments of that side is equal to the ratio of the other sides of the triangle.	19

## SOLID GEOMETRY.

*(Time, 3 hours.)*

	Marks.
1. Name the regular solids and give for each the number of faces, corners and edges.	8
2. The sum of any two plane angles of a trihedral angle is greater than the third angle.	8
3. If two intersecting planes be at right angles to the same plane, their common section is at right angles to it.	8
4. Polygons formed by cutting the faces of a polyhedral angle by parallel planes are similar to one another.	8
5. If the edge of a tetrahedron is 10 inches, what is the radius in inches of the sphere of equal volume?	11
6. If the edge of a tetrahedron is 10 inches, what is the radius in inches of a sphere of equal surface?	11
7. If the annual rainfall in the Khasi Hills is 610 inches, what is the weight of water yearly received by an acre, a cubic foot of water weighing 62.5 lbs.?	10
8. A cylinder 10 inches in diameter and 20 inches high is half full of water; into it is placed vertically a wooden cone, base 8 inches in diameter, height 10 inches, specific gravity of the wood .5; how high will the water rise in the cylinder?	11



## SPHERICAL TRIGONOMETRY.

	Marks.
<i>(Time, 3 hours.)</i>	
1. Prove $\cos A = \frac{\cos a - \cos b \cos c}{\sin b \sin c}$	13
2. Deduce $\tan \frac{1}{2} (A + B) = \frac{\cos \frac{1}{2} (a - b)}{\cos \frac{1}{2} (a + b)} \cot \frac{1}{2} C$ .	14
3. Deduce $\tan \frac{1}{2} a = \sqrt{-\frac{\cos S \cos (S - A)}{\cos (S - B) \cos (S - C)}}$	14
4. Prove Napier's rules.	14
5. Given $a = 68^\circ 20'$ , $b = 52^\circ 18'$ ; $C = 117^\circ 12'$ , find $c$ .	14
6. The sides of a triangle are $105^\circ$ , $90^\circ$ and $75^\circ$ respectively, find the sines of all the angles.	14
7. Given $B = 70^\circ$ , $C = 100^\circ$ , $a = 40^\circ$ , find $A$ .	14
8. Given $a = 32^\circ 12'$ , $b = 30^\circ 15'$ , $c = 28^\circ 18'$ , find $C$ .	14
9. Taking the radius of the earth as 4,000 miles, what is the approximate area of the triangle in square miles, whose spherical excess is $1''$ ?	14

## MEASUREMENT OF AREAS AND SUBDIVISION OF LAND.

## FIRST PAPER.

	Marks.
<i>(Time, 3 hours.)</i>	
1. In a triangular field, $AB = 10$ ch., $BC = 14$ ch., $CA = 12$ ch.; through the point within the field distant 8 chs. from $A$ , and 6 chs. from $B$ , a line is drawn bisecting the field; find the length of the dividing line.	17
2. Divide a quadrilateral in a given ratio by a straight line starting from a given point in one of the sides.	17
3. If the diameter of the sun is 800,000 miles, that of the earth 8,000, and their distance apart 92,000,000 miles, what is the limiting value in latitude of the circle of illumination at the time of the equinoxes, and what proportion of the earth's surface is directly illuminated, neglecting refraction.	17
4. Through the northerly part of Sec. 3, Tp. 33, R. 5, W. of 3rd M., runs a railway, width of right-of-way 100 ft.; the centre line crosses the western boundary of the section 10:20 ch. from the N.W. corner, and continues on a course N. $60^\circ$ E. The part of the section lying south of the railway is to be divided into equal parts by a straight line running from the quarter section post on the southern boundary. What is the azimuth and length of the dividing line?	17
5. A kite-shaped race track is 50 ft. wide. The centre-line, half a mile long, is composed of two tangents, including an angle of $60^\circ$ , and a circular arc connecting them. What is the length of the tangents, and what is the area of the track?	16
6. What is the ratio of the perimeters enclosing an area of $n$ acres, by a circle, equilateral triangle, square, pentagon, hexagon and octagon?	16



MEASUREMENT OF AREAS AND SUBDIVISION OF LAND.

SECOND PAPER.

(Time, 3 hours.)

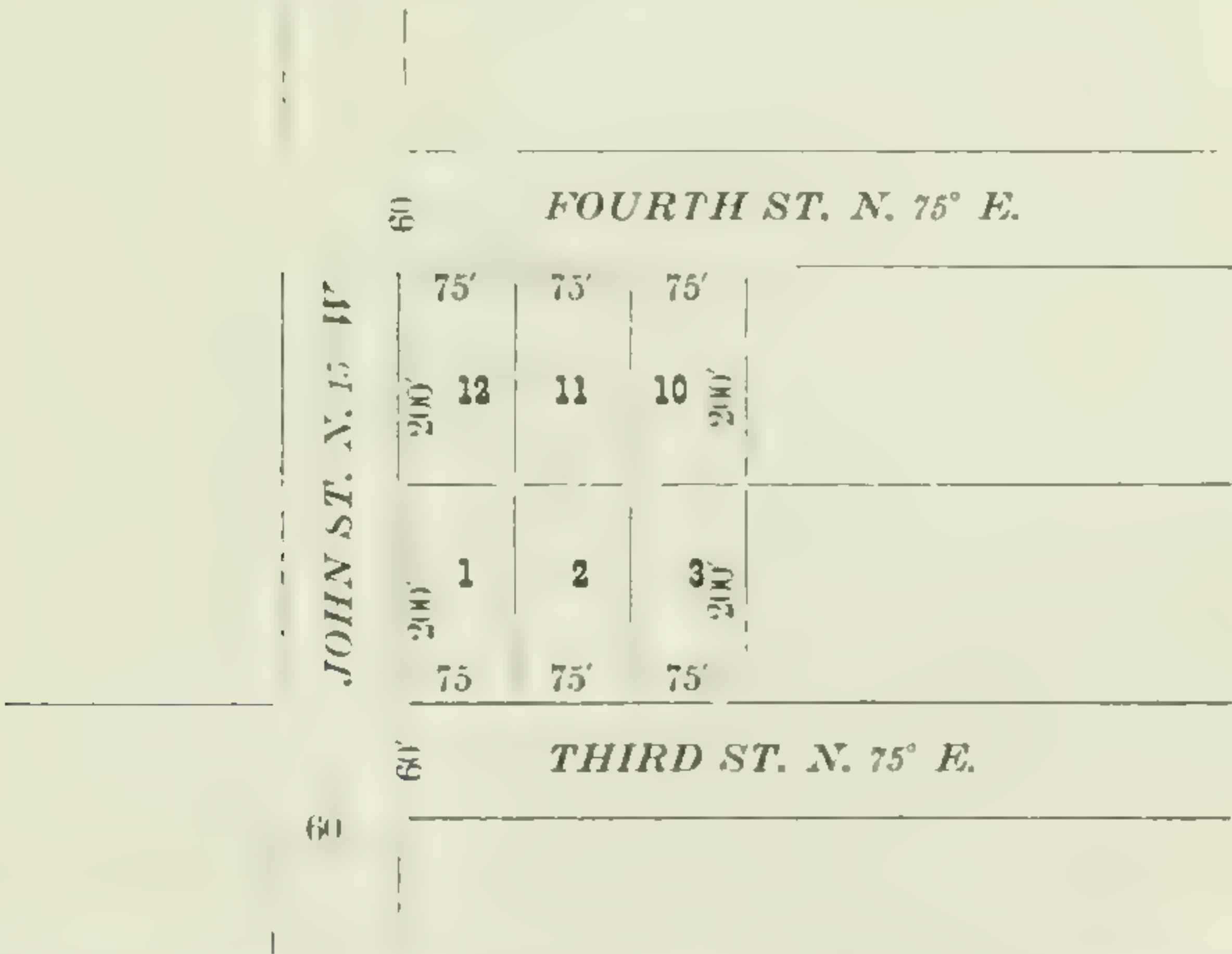
Marks.

7. The following are the notes of a survey:
- 1. S. 69° 15' E. 7.06 chains.
  - 2. N. 37° 15' E. 5.93 "
  - 3. N. 39° 30' W. 6.00 "
  - 4. S. 57° 45' W. 4.65 "
  - 5. S. 30° 00' W. 4.98 "
- Find the area by the method of Latitudes and Departures, first 'balancing' the survey. 40
8. Express the conditions necessary for a closed survey by two equations.
- (a) From these show what missing data in a survey can be supplied.
  - (b) Show when ambiguity may arise, and how the supplying of missing data affects balancing the survey. 20
9. Explain by diagram fully the rule: 'Twice the area of the figure is equal to the algebraic sum of the products of the double meridian distances of the several courses into the corresponding latitudes.' 20
10. What is the method of balancing a survey:
- (a) On the assumption that the error of closure is as much due to erroneous bearings as to erroneous chaining?
  - (b) On the assumption of erroneous chaining alone?
- What is the true area of the above field if the chain was one link too short? 20

DESCRIPTIONS.

(Time, 3 hours.)

Marks.



The above is part of the registered plan of the town of Holly in the County of Tweed and Province of Alberta. A sells to B a part of lot No. 1, and adjoining John and Third streets. The part sold is to have a frontage of forty feet on Third street to extend to the rear of the lot and the dividing line to be parallel to John street. Make a description for a deed. 25



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Marks.

2. Using the plan of question 1. Supposing *A* to own lots Nos. 1 and 2, he sells lot No. 2 to *B*, and gives the right of ingress and egress to *B* by a lane, 16 feet wide, running along the whole of the rear limit of lot No. 1. Make the necessary description for the conveyance. 25
3. Moose Creek flows across the N. E.  $\frac{1}{4}$  S. 12, T. 13, R. 15 W. in an easterly direction. *B* desires to buy the northerly part of the quarter section lying north of the creek, together with the creek. From measurement the southerly bank of the creek intersects the eastern and western quarter section lines respectively at 22<sup>ch</sup> 12 and 20<sup>ch</sup> 18 from the northern quarter section line. The whole area to be conveyed is supposed to contain 85 acres. Make a description for a deed. 25
4. Make a description for the remaining part of the quarter section given in question 3. 25

## ASTRONOMY.

## FIRST PAPER.

Marks.

*(Time, 3 hours.)*

1. Explain fully the equation of time, why it varies and when it is a maximum. A diagram is desirable. 14
2. The longitude of Ottawa is 5h. 02m. 52s. What kind of time is this? Why? 14
3. In latitude  $45^{\circ} 25'$ , longitude  $75^{\circ} 43'$ , what is the standard time of eastern elongation of Polaris, on May 27, 1904? 14
4. Without tables or computation give the approximate local mean time of eastern elongation of Polaris for any place in Ontario on the 20th of each month in the year. 14
5. For the same place and time as question 3, what was the azimuth of  $\delta$  Urs. Min. at western elongation?  
 $\delta = 86^{\circ} 36' 46''$ ;  $a = 18\text{h. } 02\text{m. } 36\text{s.}$  14
6. On the same date the observed altitude of Arcturus when on the prime vertical was  $45^{\circ} 38'$ . What is the latitude of the place? 15
7. What is the standard time of sunrise for the place and time of question 3? 15



SESSIONAL PAPER No. 25b

## ASTRONOMY.

## SECOND PAPER.

*(Time, 3 hours.)*Marks.  

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- |  |    |
|--|----|
| 8. On the 4th Base Line, R. V-VI, W. of 3rd M. on May 27, 1904, in the forenoon the mean of the observed altitudes of the upper and lower limb of the sun was $42^{\circ} 13' 30''$ when a watch showed 9h. 02m. 14s. What was the azimuth of the sun, and what was the error of the watch on standard time? | 17 |
| 9. In question 8, what was the true local sidereal time of observation?  | 17 |
| 10. What is the longitude of the place for which the time shown by the watch in question 8, was at that instant the local sidereal time?   | 17 |
| 11. On the 20th June, 1904, the altitude of the sun's centre at its lower or northern culmination was $10^{\circ} 32'$ . What was the latitude of the place of observation?  | 17 |
| 12. What is the standard time of rising for Arcturus for the time and place in question 8?   | 13 |
| 13. What is the right ascension of a star that crosses the meridian of place and date of question 8 at 10 p.m. local mean time?  | 16 |

## MANUAL OF SURVEY.

## FIRST PAPER.

*(Time, 3 hours.)*Marks.  

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- |  |    |
|--|----|
| 1. Where are the Initial Meridians now in use?   | 3  |
| 2. Between what townships is the 73rd correction line?   | 3  |
| 3. How is the deficiency or surplus on the meridians between two base lines disposed of?   | 4  |
| 4. Define a bearing and an azimuth.  | 11 |
| 5. To what meridian is a bearing referred in subdividing a township, and how is it deduced from an observed azimuth?                           | 11 |
| 6. What is to be done when the road allowance on a correction line is less than 80 links wide?   | 5  |
| 7. In closing a correction line on an initial meridian, what is to be done when the meridian intersects the jog?                               | 7  |
| 8. Give the rules to be observed in measuring a distance by means of a triangle.   | 5  |
| 9. When is a quarter section considered as sufficiently surveyed for disposal?   | 5  |
| 10. What are the limits of error in a township subdivision survey?   | 8  |
| 11. Describe the different kinds of posts, mounds, pits and trenches used in the present system of survey; show how and where they are placed. | 20 |
| 12. How is a settlement surveyed?  | 11 |
| 13. How is a group lot surveyed?   | 7  |



## MANUAL OF SURVEY.

## SECOND PAPER.

Marks.  

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*(Time, 3 hours.)*

- |   |    |
|---|----|
| 14. By what considerations is a surveyor to be guided in deciding whether a road allowance shall or shall not be left along the boundary of an Indian reserve when subdividing a township?  | 4  |
| 15. What connections have to be made in a township subdivision survey?  | 4  |
| 16. For what purposes are traverses made in connection with surveys of Dominion lands?  | 5  |
| 17. Define the <i>bank</i> , the <i>shore</i> and the <i>bed</i> of a body of water.  | 8  |
| 18. What are the rights of the owner of a piece of land fronting on a lake or river?  | 11 |
| 19. What are the bodies of water to be surveyed in subdividing a township, and what are those which are not to be surveyed?   | 9  |
| 20. In what cases is the area of the bed of a river to be deducted from the area of a quarter section crossed by it?  | 6  |
| 21. When are both banks of a river to be traversed?   | 4  |
| 22. What is to be done when the edge of a marsh varies ten chains or more according to the height of water?   | 8  |
| 23. How are the following posts to be marked?   |    |
| (a) At the corner between sections 19, 20, 29 and 30, township 59, range 19, east of the principal meridian.  |    |
| (b) At the southerly corner between sections 4 and 5, township 67, range 22, west of the 3rd meridian.  |    |
| (c) At the southerly corner between sections 15 and 16, township 31, range 14, west of the 2nd meridian. (On the north side of the road allowance between two different systems of survey.) |    |
| (d) At the southerly corner of township 103, between ranges 13 and 14, west of the 4th meridian.  |    |
| (e) At the witness mound placed 9 chains north of the S.E. corner of section 12, township 47, range 9, west of the 5th meridian.  | 20 |
| 24. Define a resurvey, a retracement, a restoration survey, an obliterated corner, and a lost corner.   | 8  |
| 25. Give the rules governing resurveys, retracements and restoration surveys.   | 8  |
| 26. Under what circumstances is a subdivider justified in resurveying or re-tracing a township outline without instructions from the head office?   | 5  |



SESSIONAL PAPER No. 25b

EXAMINATION FOR CERTIFICATE AS DOMINION TOPOGRAPHICAL SURVEYOR.

February 11 to 13, 1908.

XI.

ALGEBRA.

(Time, 3 hours.)

Marks.

1. Show that  $\frac{1}{1} \cdot \frac{3}{3} \cdot \frac{5}{5} \dots \frac{2n-1}{2n-1} > \left(\frac{1}{n}\right)^2$  6
2. Find the number of ways in which (1) a selection, (2) an arrangement of four letters can be made from the letters of the word 'proportion.' 6
3. Find the sum of the products, two at a time, of the co-efficients in the expression of  $(1+x)^n$ , when  $n$  is a positive integer. 6
4. Prove that  $1 + \frac{3}{8} + \frac{3 \cdot 5}{8 \cdot 10} + \frac{3 \cdot 5 \cdot 7}{8 \cdot 10 \cdot 12} + \dots = 2$  6
5. Express  $\frac{1}{2} (e^{ix} + e^{-ix})$  in ascending powers of  $x$  when  $i = \sqrt{-1}$ . 5
6. The integral part of  $\frac{1}{\sqrt{3}} (\sqrt{3} + \sqrt{5})^{2n+1}$  and the integer next greater than  $(\sqrt{3} + \sqrt{5})^{2n}$  are each divisible by  $2^{n+1}$  6
7. A certain stake is to be won by the first person who throws an ace with an octahedral die. If there are 4 persons, what is the chance of the last? 5
8. Find the sum of the fifth powers of the roots of the equation:  
 $x^4 - 7x^2 + 4x - 3 = 0$  5
9. Calculate the value of the determinant:

$$\begin{vmatrix} 3 & 2 & 1 & 4 \\ 15 & 29 & 2 & 14 \\ 16 & 19 & 3 & 17 \\ 33 & 39 & 8 & 38 \end{vmatrix}$$

5

PLANE AND SPHERICAL TRIGONOMETRY.

(Time, 3 hours.)

Marks.

1. Sum to  $n$  terms the series:  
 $\sin 3\theta \sin \theta + \sin 6\theta \sin 2\theta + \sin 12\theta \sin 4\theta + \dots$  9
2. If  $x$  be the circular measure of a positive angle less than a right angle,  
 $\sin x$  is greater than  $x - \frac{x^3}{6}$  9
3. Compute the ratio ( $=\pi$ ) of the circumference of a circle to its diameter. 8
4. Solve the equations (1)  $\sin 9x + \sin 5x + 2 \sin 2x = 1$   
(2)  $\frac{\cos^3 a}{\cos x} + \frac{\sin^3 a}{\sin x} = 1$  9
5. (a) Explain the principle and derivation of addition and subtraction logarithms.  
(b) Give illustrations of applicability. 8



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Marks.

6. Given the equation  $\tan z = \frac{m \sin a}{1 + m \cos a}$  to express  $z$  in a series of multiples of  $a$ . 8
7. (a) Give the three fundamental equations for the general spherical triangle.  
 (b) Give the solution of oblique spherical triangles by means of a perpendicular, applying same to Case I, given  $b, c$ , and  $A$ ; Case II, given  $A, C$ , and  $b$ . 8
8. Adapt the expression  $a \cos A + b \cos B + c \cos C$  to logarithmic computation, the letters denoting the sides and the angles of a triangle. 8
9. If  $k$  is the area of a spherical triangle, show that

$$\tan \frac{1}{2} k = \sqrt{\tan \frac{1}{2} s \tan \frac{1}{2} (s-a) \tan \frac{1}{2} (s-b) \tan \frac{1}{2} (s-c)} \quad 8$$

## ANALYTICAL GEOMETRY—TWO DIMENSIONS.

Marks.

(Time, 3 hours.)

1. Find the equation of a straight line in terms of its intercepts on the axes of coördinates. 8
2. Define 'anharmonic ratio,' illustrating by a diagram. 8
3. Deduce the equation to the tangent to the circle  $x^2 + y^2 = a^2$  at the point  $x, y$ . 8
4. Define 'radical axis,' and prove analytically that the radical axes of three circles meet in a point. 8
5. Write down the equation to the ellipse referred to its centre and axes. Prove that the sum of the two focal distances of a point on the curve is equal to the major axis and that the perpendicular to the directrix is in a constant ratio to the focal distance. 8
6. Find the equation to the normal to the ellipse at a given point on the curve. How many normals may be drawn to the ellipse from a point not on the curve? 10

## Three Dimensions.

7. Write down the equation to a straight line given the coördinates of two points upon it, and find the angles which it makes with the axes of coördinates. 10
8. Give formulæ for the transformation of coördinates, without changing the origin, in terms of the direction cosines of the new axes as referred to the old. 12
9. Find the condition that the plane  $lx + my + nz + p = 0$  may touch the conicoid  $ax^2 + by^2 + cz^2 + d = 0$ . 12
10. Prove that the sections of an ellipsoid by parallel planes are similar ellipses. Hence deduce the relation between the radii of curvature of the sections of an ellipsoid made by different planes containing the normal at a given point. 16



DESCRIPTIVE GEOMETRY AND PROJECTIONS.

(Time, 3 hours.)

Marks.

1. Two intersecting straight lines being given by their projections, find the angle of the lines. 8
2. Two straight lines which do not intersect being given their projections, find the shortest line joining them. 9
3. Given the declination and hour angle of a star and the latitude of the place, find the azimuth of the star. 9
4. Give the definition of the picture plane, principal point, horizon line, distance points and vanishing points in a perspective.  
Given the altitude of a point above the ground plane and its horizontal projection, find its perspective. 9
5. It is desired to construct a map of Canada comprised between latitudes  $42^\circ$  and  $60^\circ$  north and longitudes  $56^\circ$  and  $141^\circ$  W. of Greenwich. Comparing the polyconic and the secant conical projections, what are the maximum errors of representation in each case? 15
6. In a perspective projection, explain how you find where the point of vision must be placed in order that the total misrepresentation over a given area be a minimum. 15
7. Define the conical Orthomorphic projection (Gauss' or Lambert's second). What are its properties and for what kind of maps is it best adapted? 10

DIFFERENTIAL AND INTEGRAL CALCULUS.

(Time, 3 hours.)

Marks.

1. Differentiate with respect to  $x$   

$$\log \left\{ 2x - 1 + 2 \sqrt{x^2 - x - 1} \right\}$$

$$e^x \tan^{-1} x$$

$$\cos^{-1} \left\{ \frac{3 + 5 \cos x}{5 + 3 \cos x} \right\}$$
 10
2. If  $A$  be the chord of any circular arc,  $B$  that of half the arc, prove that the length of the arc is equal to  

$$2 B + \frac{1}{3} (2 B - A).$$
 with an error which, for an arc equal to the radius, is less than 1 in 7680. 10
3. From Taylor's series derive John Bernoulli's series. 10
4. If  $u$  is a homogeneous function of  $x$  and  $y$  of the  $n^{\text{th}}$  degree, prove that  

$$x \frac{du}{dx} + y \frac{du}{dy} = nu$$
 10
5. Find the maximum value of  $x^x$ , also its limiting value when  $x = 0$  or  $\infty$ . 10



	Marks.
6. Find the radius of curvature of an ellipse at the point where the normal makes an angle of $\phi$ with the major axis.	10
7. Sum the series $p_1 + \frac{1}{2} p_2 + \frac{1}{3} p_3 + \dots \dots \dots \frac{1}{n} p_n$ where $\frac{1}{p_r} = \frac{n}{r} + \frac{r}{n}$ when $n$ is indefinitely increased.	10
8. Obtain a formula of reduction for the integral $\int e^{ax} \cos nx \, dx$	10
9. State Simpson's Rule and apply it to determining the area of an ellipse included between two ordinates to the major axis.	10
10. Find the volume and moment of inertia about its axis of a section of a paraboloid formed by revolving the parabola $y^2 = 20x$ about the axis of $x$ , the section being bounded by the planes $x = 0$ and $x = 10$ .	10

PROBABILITY AND LEAST SQUARES.

(Time, 3 hours.)

	Marks.
1. Two independent witnesses, $A$ and $B$ , whose probabilities of speaking the truth are $p$ and $q$ , respectively, agree in a statement of which the <i>a priori</i> probability of truth is $P$ . What is the probability that the statement is true?	15
2. A phenomenon of which the causes are unknown has been observed to recur at regular intervals. If it has thus happened $n$ times, what is the probability that it will occur $m$ times more?	15
3. Write down the equation to the curve of probability of error of observation. Indicate its form in a general way, and show the relation to the curve of the mean square error, the probable error and the average error.	20
4. Two sets of measurements are made with results $a$ and $b$ , with probable errors $r$ and $r_1$ respectively. Find the most probable value got by combining them, and its probable error, when (a) $a$ and $b$ are measured lengths of the same rod. (b) When $a$ is a zenith distance, and $b$ is a declination from which the latitude is required ( $b \pm a$ ) (c) When $a$ and $b$ are latitudes determined by moon culminations observed on the east and west limbs of the moon respectively.	25
5. In indirect measurements, when $n$ observations have been made and there are $m$ unknown quantities, describe briefly the process of finding the most probable value of each quantity and its probable error.	25
6. In direct measurements of quantities which are not independent of one another, show how the most probable values are found. Explain the method of elimination, also that of correlates.	25
7. Indicate how the method of least squares is used in finding values for the constants of formulæ, also in the formation of empirical formulæ.	25



# REPORTS OF SURVEYORS







# GENERAL REPORTS OF SURVEYORS

## 1907-1908

### APPENDIX No. 13.

#### REPORT OF C. F. AYLSWORTH, JR., D.L.S.

##### RESURVEYS IN EASTERN MANITOBA.

MADOC, February 26, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—

I have the honour to inform you that in accordance with your instructions dated April 9, 1907, to make a resurvey of townships 16 and 17, range 8, and the incomplete portions of townships 14, 15 and 16, range 7, and township 15, range 8, I left Madoc on April 22 and arrived in Winnipeg on the 24th.

I proceeded at once to organize a party and complete the necessary camp and transport equipment, as well as to secure provisions.

On May 2 I arrived at Beausejour with my party, and on the 4th sent for the horses and wagons, which were ten miles from this place. The horses had been well taken care of but hay was getting rather scarce as the winter had been an unusually long and severe one. Though great quantities of hay were harvested there last fall, the price per ton rose from three to ten dollars and farmers were compelled to turn their stock out grazing early in the spring.

Vegetation was very backward, till warm weather and rain began on June 10. The rain flooded the sloughs, limiting the grazing area for the cattle to the uplands, so that grazing conditions did not improve as the season advanced, and the stock went into winter quarters in poor condition.

The flooding of the hay-sloughs rendered it difficult for the farmers to secure hay for their stock for the following winter, as they were compelled to cut their hay in water up to their knees and haul it to the uplands to dry. This condition of affairs existed more particularly in township 15, range 7. It is asserted by the settlers in this township that with a strong west wind the waters of lake Winnipeg are forced up over these flats.

On May 9 we moved from Beausejour to section 21, township 14, range 7. The bush roads were very difficult to travel as the snow was still about a foot deep, and as the ground was frozen it made mounding very difficult. In order to perform this work satisfactorily, I decided to postpone it until the frost had entirely disappeared.

In township 16, range 8, very few traces of the original survey could be found, the corners along the west of the township boundary, and along the east boundaries of sections 31, 30, 19, 18, 7 and 6 being entirely obliterated.

Except in the west half of township 16, range 8, and the west side of township 15, range 7, settlement was very scattered on account of the unproductive quality of the soil. Large areas of it are rolling jackpine, sand and gravel ridges, tamarack,



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muskeg and large tracts of stony ground. Some of the settlers obtained sufficient stone to assist very materially in building fences.

The crops developed rapidly after favourable weather set in on June 10, and there were fine prospects of a good harvest, but after threshing the yield was only twenty-five bushels per acre, or half of what was expected, while the quality was inferior.

In township 15, range 8, there is a ditch along the south boundary, another running easterly along the north side of sections 7, 8, 9, 10, 11 and 12, another running along the north boundary of sections 19, 20, 21, 22, 23 and 24, and one partially across the north boundary of section 30. The west boundary of the township is also ditched. The remaining road allowances running east and west and the road allowance along the east boundary have been cleared out, measured and levelled, but no ditches are yet constructed along these roads. The excavations of the pits which mark the road allowances along which the ditches were constructed immediately filled with water, and as the whole township was practically covered with water it would be impossible for us to move our outfit into the township except when the ground was frozen.

Game was very scarce in this township owing no doubt to the land being so badly flooded.

I have the honour to be, sir,

Your obedient servant,

C. F. AYLSWORTH, *D.L.S.*

## APPENDIX No. 14.

### REPORT OF DAVID BEATTY, *D.L.S.*

#### MISCELLANEOUS SURVEYS IN SOUTHERN ALBERTA.

PARRY SOUND, April 4, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,

I have the honour to submit the following report of my surveys of 1907.

Under your instructions to make restoration survey of several townships in the vicinity of Lloydminster I went to Prince Albert where I had wintered my horses and stored my outfit in 1906, and after collecting and repairing my outfit, I shipped it to Lloydminster. Here I found further instructions to investigate the necessity of making a restoration survey of township 50, range 27, west of the third meridian. I also found a telegram directing me to go south to township 28, range 6, west of the fourth meridian, and survey seven townships in that vicinity. While waiting for definite instructions and sketches, I investigated the necessity of a resurvey of township 50, range 27, by driving over the township and interviewing nearly all the settlers in it. The only missing monuments were the quarter-section corners on the east and west sides of section 34. These I established, as they had not been built in the original survey.

I then returned to Lloydminster and waited a few days for final instructions for the survey south of Sounding lake. After receiving these I moved south over a fairly good graded road along the fourth meridian for about thirty-two miles, crossing Battle river about thirty miles south of Lloydminster, then by trail to the east side of



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Sounding lake, where there is a small detachment of mounted police, thence to township 32, range 6, where I traversed a lake. I then moved into township 31, range 6, which I subdivided, or rather retraced, finding only a few monuments missing. I resurveyed townships 30, 29, 28 and 27, range 6 and townships 27 and 28, range 7. In townships 27 and 28, ranges 6 and 7, the greater number of the monuments were not built, although the iron posts were nearly all planted and marked and many of the quarter-section corners were marked with a wooden stake about two inches square. The description of one of these townships practically covers them all as to suitability for agricultural purposes. The soil is mostly clay, without any black soil on top, and the face of the country is rolling prairie, except township 27, range 6, which is more hilly with gravel and stones on the hills. There is a scarcity of good water in all that part of the country. In township 30, range 6, the only water in the dry season is Sounding creek, which crosses the township from west to east. In township 29, I found one small slough which served for watering the horses, but I had to draw water from Sounding creek for camp use. In township 28, range 6, I drew water from Sounding creek for both the horses and camp use, although there was some water in holes in a large slough or lake, but the horses could not reach it without miring. In township 27, range 6, I found a spring in the northwest corner of section 2, which was the only water fit for use in the township. In township 27, range 7, I found a spring on the east side of section 9. I found no water in township 28, range 7. There is no wood for fuel in any of the townships surveyed.

I have the honour to be, Sir,

Your obedient servant,

DAVID BEATTY, *D.L.S.*

## APPENDIX No. 15.

REPORT OF P. R. A. BELANGER, *D.L.S.*INSPECTION OF CONTRACTS, AND MISCELLANEOUS SURVEYS  
IN NORTHERN ALBERTA.

OTTAWA, March 16, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—

I have the honour to submit the following general report on my operations during the past season in connection with the verification and rectification of some survey marks in the Yorkton district and the inspection of contract surveys in that part of the Edmonton district west of the fifth meridian.

I received your instructions on April 15, and at once made the necessary preparations for an eight months' expedition, securing also from the office all the necessary plans and sketches in reference to my work, but it was April 21 before I could leave for the West.

On my arrival at Prince Albert, I organized my party and sent part of it via Birch hills to Domremy to secure my transport outfit, which I had left the year before in care of C. B. Duval, and to drive down to Humboldt, while myself and two other members of the party met them at the latter place on May 2, by rail from Prince Albert via Warman.



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On the 4th my assistant, Mr. A.L. Cumming, joined the party at Humboldt, and after making my final preparations at that place I proceeded to Englefeld, in township 37, range 19, west of the second meridian, for my initial work which consisted of the traverse of Luse lake, which had been omitted in the original survey.

This work occupied me only one day, after which I started for 'Round Plains.' From Humboldt to Englefeld I followed the road along the Canadian Northern railway and from the latter village I travelled south to Prairie Rose. All along the way I passed through colonies of German Catholic settlers, who, though newly arrived in the country, are all very prosperous and highly satisfied with the location. Villages with stores, hotels and churches are erected at every railway station, attesting the progress of these enterprising settlers.

From Prairie Rose I travelled across the prairie on the west side of Quill lake till I reached the old Touchwood trail, which I followed to 'Round Plains,' which locality I reached on May 13.

Here, my work consisted of the retracement of the east boundary of township 29, range 15, together with the resurvey of the north boundary of the adjoining sections in ranges 14 and 15. This resurvey was accomplished without any difficulty, the land being vacant, and the original marks for quarter sections on section chords entirely obliterated.

As already mentioned in previous reports there are not many settlers at 'Round Plains'; the land is the best that can be desired, but as it is owned by a private firm who hold it at a high price, it may be some time before it becomes thickly settled.

From 'Round Plains' I proceeded to township 23, range 11, via Touchwood Hills mission, and Lipton, a thriving little town on the Pheasant Hills branch of the Canadian Pacific railway, where I stopped for a few hours to buy supplies before going on to my destination.

In this township my work consisted of the correction of an error of ten chains which had been made in the original subdivision along the west boundary of the Indian reserve. I also resurveyed the section chords affected by the error. This correction was made without trouble, the northeast corner of the defective homesteaded section being entirely obliterated, and the settlers having been made aware of the error when I discovered it in 1904, had made their improvements so as not to encroach on the adjoining land.

My next work consisted in removing and replacing to proper places witness mounds in townships 25, ranges 9 and 10, which had been placed on the road allowance, after which I proceeded to investigate the discrepancies shown in the description of survey monuments restored by me in 1902 in numerous townships in the Yorkton district, as compared with their description in the notes of the original surveys.

The rectification of all these discrepancies extending over twenty townships kept me busy till June 28, without interruption, and though I limited my work to the location and rectification of the erroneously described marks, avoiding as much as possible making any changes which might cause disturbance among the settlers, though I detected numerous large errors which I would have corrected had the land been vacant.

The large tract of land just referred to which only a few years ago was mostly vacant is now thickly settled; it is crossed by the Pheasant Hills branch of the Canadian Pacific railway, along which thriving towns have been started at every station.

On June 29 I started for Kamsack, where I arrived on July 2. A few miles south of this town I passed through a Doukhobor village where I saw the finest fields of wheat in the whole country I had travelled over, but I was greatly shocked to see a large herd of cattle grazing in it, and as near by several women were gardening or digging snake roots, I tried to make them understand that it was a crime to allow the cattle to destroy their crop, and offered them help to chase the herd from their field, but they only laughed at me and shook their heads in sign of refusal, convincing



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me that they were premeditating another pilgrimage in the fall in search of the Messiah, who would provide for them. These people are to be pitied for their monomaniac affliction; they are a very moral and industrious people and would make a desirable class of settlers if they could do away with their foolish practices.

On July 3, I shipped my outfit by rail to Edmonton, and boarded the train with my party on the next day for the same place. On my arrival there, I reorganized the party and completed my outfit for the inspection of contract surveys west, north and northwest of lake St. Ann. This work for the most part lasted for the remainder of the season, and involved much loss of time in travelling from one contract to another, owing to the character of the country, which is mostly timbered and much broken by tamarack swamps, principally in Mr. Baker's contract west of lake St. Ann. Here the country is low and was flooded by the heavy rainfall of last season which rendered the roads almost impassable for vehicles. To enter the country north and northwest of lake St. Ann from this place, I had to make a circuit via Riviere-qui-barre and Belvedere crossing on Pembina river. From here the Chalmers road leads towards the north to a ferry at Arthabaska river, crossing in township 61, range 5, west of the fifth meridian, in R. H. Knight's contract, while the 'Peavine prairie' road branches westerly across the renowned valleys of Pembina and Paddle rivers, and runs across the contracts of R. H. Cautley, Thos. Drummond, H. McGrandle and M. Kimpe. This road can be followed with wagons to within six miles of the mouth of McLeod river, where the country becomes so rough and hilly that a pack train has to be used to reach the river, where there is a small Hudson's Bay Company's post.

Separate detailed reports on the eight contracts I examined have already been supplied giving my appreciation of the work inspected in every contract, and I do not think it necessary to enter into further details as to the merit of the work, which in general was found satisfactory.

The country covered by Mr. Knight's contract comprises township 60, range 2, and townships 61, ranges 1 to 5, west of the fifth meridian and is reached from Edmonton via Riviere-qui-barre, Belvedere and Chalmers road which runs across township 61, range 5, and by roads branching from the Chalmers road and running along Pembina and Paddle rivers. It has been greatly overrun by fires in the past, and now the dry land is overgrown with shrub and vetches, affording considerable good land ready for homesteading. The low land is covered with spruce and tamarack, good for all building purposes.

A few squatters were found in township 61, range 3, and in the valley of Athabaska river in range 5 at a short distance from the ferry.

From Belvedere the 'Peavine prairie' road leads to township 59, range 5, in Mr. R. H. Cautley's contract, which covers townships 58 to 60 inclusive of the same range. Several settlers were found in townships 58 and 59, where large tracts of scrubby brulé are found, but township 60 is heavily timbered with large spruce which I believe is included in a timber berth that will prove very valuable some day, if it is not destroyed by fires.

Mr. Thos. Drummond's contract covers townships 57 to 60, range 6, and as far as could be judged by the three townships inspected, the soil is good but it is mostly timbered, though patches of brulé are found here and there, but they are overgrown by a heavy second growth. Township 60 is entirely covered by large spruce alternating with tamarack swamps. A few large hay-meadows are found along creeks and lakelets in townships 58 and 59 and settlers were already searching for them.

From range 6 we inspected Mr. H. McGrandle's contract, covering townships 57 to 59, range 7, where the country becomes much more open, and the soil improves to first class. The land is covered with light scrub and a fine growth of vetches which affords very good pasturage for horses and cattle. This brulé appears to extend over township 58 and the southeast part of township 59, while the northwest part of the latter is heavily timbered with large spruce, which appears to be the continuation



of that belt of heavy timber referred to in ranges 5 and 6, and appears to extend northerly to Athabaska river.

The wagon road enters on section 1 of township 59, and turns south and south-westerly across township 58, leaving it on section 18 to enter 'Peavine prairie' country in range 8, which forms part of the contract of Mr. M. Kimpe, which extends westerly to the mouth of McLeod river. This little prairie is 'the promised land' of settlers looking for a homestead, it is nothing but a burnt tract of country, covered with a high growth of vetches, climbing in short scrub, which at a distance gives it the appearance from which it derives its name.

In range 9 the country is also much opened, and squatters are scattered here and there along Paddle river, and all speak highly of the country of their adoption.

The large tract of land just above described, extending from range 5 to range 9, is well watered by Pembina river, Paddle river and numerous small streams and lakes in which fish abound. The soil is rich and very suitable for farming purposes. Numerous settlers with their families were met on the way back, going into that country to make a home.

Returning from township 58, range 9, to lake St. Ann I followed a wagon road which has been lately opened by different surveyors and settlers. This road, though very bad in summer time, was found fairly good in the fall, and as it is the most direct and shortest route to the 'Peavine prairie' and Paddle river valley, the local government of Alberta, which has at heart the development of that country, has already expended large sums of money during last season on the part east of lake St. Ann and northwest via 'the narrows' to about two miles west of that point, where I met the first gang of workers.

These improvements consist in cutting a road one chain wide through the bush and grading all soft places, or making corduroys over tamarack swamps.

This road will prove a blessing to the settlers, one of whom was so discouraged by his hardships over this road last summer that he left his homestead never to return. It will greatly help to develop the 'Peavine prairie' country as well as Pembina and Paddle river valleys, and will most probably in the future be extended into Peace river valley via the mouth of McLeod river and Sturgeon lake by following the pack trail already existing.

The thing now most needed is a good ferry at 'the narrows' at lake St. Ann, where there is only a small raft manned by the Indian chief of the reserve at that place, who charges what he likes for the poor accommodation he furnishes.

The contracts I inspected west of lake St. Ann comprise townships 54, 55 and 56, range 5, surveyed by the late A. Michaud under contract No. 19 of 1906, townships 54 and 55, range 7 in contract No. 21 of 1906, by R. H. Knight, and contract No. 2 of 1907, comprising township 54, range 9, and townships 53 and 54, range 10, together with part of contract No. 24, extending westerly from contract No. 2, both made by J. C. Baker.

Two roads lead to contract No. 19, one the Government road from 'the narrows' runs across township 55, while the other follows the old Jasper House trail as far as Sandy McDonald's place on section 24, township 54, range 5, from which place A. Michaud cut a road northwesterly across townships 54 and 55 meeting the Government road in the latter township.

I did not meet with any settlers in contract No. 19, but the land is good and I have no doubt it will be taken up soon. For the present it is mostly heavily timbered with spruce which is very suitable for lumbering as well as building purposes.

Contract No. 21 is reached by following the Jasper House trail as far as Pierre Gray's place in township 53, range 6, and then by branching from there northwesterly over Yak's trail which is followed to a point two miles past the crossing of Pembina river where Mr. R. H. Knight cut a road northerly across township 54 as far as the centre of township 55, in range 7.



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No actual settlers were found in these townships, but the land being first class I have no doubt the northern part of township 54, and the southern row of sections in township 55, will soon be taken as they are partly open, but the remainder of this contract is rather heavily timbered with poplar, and consequently not ready for homesteading.

About nine miles west of Pierre Gray's place, by following the Jasper House trail, we crossed Pembina river, and about five or six miles farther the road runs by the houses of two settlers, Asselin, and Lambert, and from the latter's it is opened for wagons as far as the east end of Chip lake, still commonly named Lobstick lake.

At Lambert's I left my vehicles and part of my camp equipage, and proceeded from there to Mr. J. C. Baker's contract with a pack-train. At the start I crossed Lobstick river, a tributary of Pembina river, and the outlet of Chip lake, and a short distance farther passed by the two last settlers to be met with on this trail before entering Mr. Baker's survey, which is only a few miles farther west.

The whole of this contract extends over a low country badly broken by tamarack swamps. Fires have destroyed the first growth of timber, and there are many scrubby openings to be found but the land does not appear very favourable for farming, the grass is extremely scarce, and can be found only near creeks; however, I remarked a couple of places at the east end of Chip lake where there is a good quantity of hay which would permit the establishing of small ranches by letting the cattle run through the brulés.

The timber, in general, is good for building purposes, and in ranges 11 and 12 spruce may be found suitable for lumbering.

Blueberries are found in such large quantities all over the country extending westerly from lake St. Ann to McLeod river, that I believe a canning industry placed somewhere in the vicinity of Chip lake for the packing of that fruit, would prove a paying enterprise.

The country above described, though poor in appearance for farming purposes, is bound to be developed some day and bring its share of revenue from its mineral resources, and its proximity to the Grand Trunk Pacific railway, whose location runs through it, will afford transportation for fire-wood as well as coal, which is found in abundance in that district along this railway, construction of which is now under contract and will be in full swing by next summer.

An American company had a party last summer locating the extent of a coal mine which they claim is the best discovered up to the present time, and propose to work it on a large scale as soon as the railway will be built. It is situated on the east side of Pembina river, somewhere near the crossing of the Jasper House trail, and to judge by the samples of drifted large lumps I have seen in the river I do not hesitate to say that it is the best coal I have yet seen in the Edmonton district.

I do not know of any other mineral in this vicinity, but the lumbering industry can be carried on to a large extent in the places above referred to, principally in townships 60, ranges 5, 6 and 7, where lumbering will prove a very remunerative business.

In the road allowance, on the north boundary of section 9, of township 54, range 9, I came across a spring of good clear water situated on a small knoll, which spring was surrounded by a border of petrified moss two or three inches thick, which excited my curiosity, and I have brought back a sample which appears to indicate the presence of sulphur or lime, though hardly appreciable in the water, and I believe if the latter were analyzed it might perhaps prove of value.

While on the subject of curiosities, I might mention that I found in the bed of Athabaska river a curiously shaped stone resembling in colour and shape a petrified human heart, which if not really such is wonderful as a specimen of the action of water on pebbles.

During the season I saw only two deer, and I believe that they as well as all fur bearing animals have to remove farther north across Athabaska river to flee before the settler intruding on their breeding ground.



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Small game, such as geese, duck and partridge is very scarce, even hares could hardly be found last season, but I believe the scarcity of the latter is only due to the periodical disease which kills them off, although they become even more numerous after a while.

From November 16, to 19, I made some retracement surveys in township 53, range 3, west of the fifth meridian, as required by your instructions dated September 3, 1907, after which I intended to continue the inspection of the additional part of contract No. 24, but the contractor not having yet finished his survey and being unable to secure anybody to freight oats for my horses, I was advised not to undertake the journey to McLeod river at such a late season of the year when no feed could be obtained for horses in that bush country. I therefore decided to postpone the inspection till next spring, and after storing my outfit with Mr. Angus McDonell, of Ray, I returned to Edmonton where I discharged my party and took the train for Ottawa, where I arrived on December 8.

I have the honour to be, sir,

Your obedient servant,

P. R. A. BELANGER, *D.L.S.*

## APPENDIX 16.

### REPORT OF LEWIS BOLTON, *D.L.S.*

#### MISCELLANEOUS SURVEYS IN THE VICINITY OF THE PAS, SASKATCHEWAN.

Listowel, November 15, 1907.

E. DEVILLE, Esq., LL.D.  
Surveyor General,  
Ottawa.

SIR,—I have the honour to report that in accordance with your instructions dated June 10, 1907, I left Listowel on July 1, for The Pas, to make certain surveys in that vicinity. I arrived in Winnipeg on July 4, purchased my supplies, had my transit overhauled and engaged one man to accompany me on the work. I left Winnipeg on July 10 for Winnipegosis, where I arrived on Thursday, July 11. I found the steamer *Lottie S.*, owned by the Northwest Fish company, was the only boat moving on the lake, and that she would not connect with the steamer *Cumberland* on Cedar lake for The Pas until Wednesday, July 24. I arrived at The Pas on the evening of the 24th. Next day I took a look over the survey made by Mr. Richard, *D.L.S.*, between blocks 'A' and 'B,' Indian reserves, for Louison Marcellais, Isaiah Buck and others. I was told by these parties that they had sold this land to Mr. Finger, for a site for a sawmill. Mr. Finger's agent told me that Mr. Finger had gone to Ottawa for the purpose of having the title transferred to him and would be back in about two weeks. I concluded to leave this survey until he returned.

I engaged four Indians to assist in the surveys, three of them at \$1.50 per day, and the other at \$2.00 per day, the latter to act as interpreter besides performing other duties. These wages included board, and was the current rate for such work in that district. Friday and Saturday being wet, we were not able to commence work until Monday, when we moved camp to Big Eddy and commenced the survey of that settlement, including the hay-lands along the south side of the Saskatchewan river. Most of the parties interested in this survey were away from home at the time, but



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the Indian agent, and Dr. LaRose, had consulted with them about the matter and advised me to proceed with the work. I surveyed the hay-lands, according to their wishes, into lots to correspond with the lots in the settlement survey.

I may say that there is no more land in the rear of the Indian reserve fit for lots, other than those surveyed. The soil is not fit for gardens even on the lots surveyed, there being little or no mould on the surface, which is pure gravel and sand. Part of the hay-lands in a dry season might be cultivated for gardens, the soil being sandy loam.

Mr. Henry Cook, who acted as spokesman for the Indians in this settlement, told me that they (the Indians) would like a timber reserve up Saskatchewan river. The timber on these lots is not large enough for building houses with. I told him that they would require to submit an application to the Department giving the location and extent of the reserve they wished.

The hay-lands in connection with this settlement are very suitable for growing hay, and are close to their lots.

I returned to The Pas and revised the survey of lots, now known as the Finger property, between blocks 'A' and 'B,' Indian reserves. Mr. Finger stated that he had purchased the rights of the Indians, and asked me what my instructions were as to the survey of the lots. I read them over to him, and he seemed quite satisfied with them. I asked him where he would like the road allowance laid out, and he told me to lay it out eight chains back from the bank of the river, across the lots and parallel with the river, and a road along each side from this road to the river. Mr. Finger stated that the Minister of the Interior had told him that he intended to have these lots of the Indians extend back a mile from the river, but he never asked me to lay out the lots to that depth. I inquired of the Indians how far they expected their lots to go back from the river, and they said to the back line run by Mr. Richard. I asked them how they were satisfied as to the depth and they signified that they were well satisfied. I therefore resurveyed the lots in accordance with your instructions, and those of Mr. Finger as to the position of the road.

I then surveyed a piece of ground on Pas river west of The Pas Indian reserve, for J. H. Gordon, merchant at The Pas. This land is low and flat, and subject to overflow from Pas river. The soil is sandy loam, and in a dry season would raise considerable grain and vegetables. This year being very wet scarcely anything matured.

I received a letter from Dr. Cash, M. P., the member for that district, asking me to make a survey up on Cormorant lake at 'the narrows', about fifty miles north of The Pas, for George Cowan and others. After finishing the survey of the Finger property, I went up to Cormorant lake and made three surveys, one for Mr. Cowan, one for the Hudson's Bay company and one for Mr. Presonias. These parties had made considerable improvements and had occupied this land for about eight years. The land had the best soil (a clay loam) but was underlaid with stones and gravel. The finest crop of potatoes and other garden produce that I saw during the summer grew there. The timber was chiefly spruce and poplar, some quite large, from twelve to eighteen inches in diameter, and fit for lumbering purposes.

I then returned to The Pas and made a survey on the north side of Saskatchewan river, adjoining The Pas Indian reserve, of a group of lots claimed by Zaccheus Umfreville and five others. Mr. Umfreville has been occupying his lot since June last. The others had not occupied the land, but had cut down some underbrush, &c. The Umfreville settlement lots cover all the land there fit for building upon. The land down stream is very low and wet, and in the rear, very swampy. The soil is shallow and stony. What the Indians seem to desire is a spot along the river to build a house and enough land to grow a few vegetables. They make no inquiries about roads to their lands. They consider that where they can launch their bark canoes on the water of the great Saskatchewan at their door, that they can travel wherever they please. I then made a survey on the south side of Saskatchewan river



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adjoining block 'B,' down stream. This is a group of lots claimed by Matthew Buck and five others. They had not occupied the land, but had lately cut down some underbrush. The lot is mostly swamp; a narrow fringe along the river is high enough to build dwellings on, but a short distance back it is wet, having about two feet of moss, with nothing but gravel beneath. Here and there, there may be little knolls of higher land, but of small extent. The timber is small, not fit for anything but firewood. There is very little more land on this side of the river fit for building upon.

I next made a survey of 'Birch Point' settlement, a group lot adjoining The Pas Indian reserve on the west, which had been occupied by Isaiah Young and four others, each of whom has a dwelling house erected thereon, and some clearing done. The land is somewhat higher and more rolling, with more clay and loam on the surface, but only in small areas, the main portion being stony and gravel subsoil. This high land runs some distance farther southwesterly along the Canadian Northern railway, and there is room for other settlements. The strip of high land is narrow between the railway and the marshy lake.

I also made a survey adjoining 'Birch Point' settlement for a group lot intended to be applied for by Louison Marcellais and others who had sold their land along the Saskatchewan to Mr. Finger.

I also made a survey of a piece of land adjoining The Pas townsite lying along Pas river for Louis Bacon, who had built a house and resided thereon for some time. It is mostly marsh, there being a narrow strip along the bank of Pas river, fit for cultivation, but scarcely high enough to build upon with safety from floods.

Game was plentiful, such as moose and other kinds of deer, bear, wolves and smaller animals. Fish in abundance is found in all the lakes and rivers and is of the best quality, such as whitefish, lake trout, sturgeon, jackfish and smaller varieties.

In the Pas district, game such as deer, bear, &c., are very scarce, but ducks, geese and all kinds of waterfowl are numerous. The season, from the time I arrived at The Pas, was very wet, with frequent heavy thunderstorms. The lakes, rivers and swamps were flooded, making the work in the low lands very disagreeable and somewhat dangerous. The first frost of the season occurred about the end of August, but was so slight that it did not affect the potatoes. During the first half of September there were occasional frosts, but not heavy; quite a number of gardens had not been affected very seriously, considering the wet season. The temperature was much milder than you would expect in that latitude.

As the season had been very wet and cold and showed prospects of an early winter, I concluded to leave for home at the first opportunity, having no other work in view. On the morning of Monday, September 16, the steamer *Marjorie* sailed for 'high portage' and my man and I took passage on her, arriving at Winnipeg on Monday, September 22, and at home on September 30.,

I have the honour to be, sir,

Your obedient servant,

LEWIS BOLTON, D.L.S.



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## APPENDIX 17.

## REPORT OF C. E. BOURGAULT, D.L.S.

## RESURVEYS IN THE PROVINCE OF MANITOBA.

St. JEAN PORT JOLI, March 6, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit the following report on resurveys made during the past season in the province of Manitoba.

In accordance with your instructions of January 10, 1907, to survey a fringe of marsh on the shores of lake Manitoba, I left home on January 17, arriving in Portage la Prairie on the 24th, having been delayed two days at Fort William by a snow-storm. The greatest difficulty was organizing a party and procuring the transport outfit, as the horses were at Gladstone and the sleighs at Oak Point, one hundred and fifty miles apart. I bought supplies and shipped them to Poplar point, where I hired two teams to take them to St. Marks in township 15, range 5.

The soil in this township may be ranked as third class, being composed of sand and gravel, but hay is plentiful and of first class quality. The settlers depend for their living on fishing in lake Manitoba in winter and on stock raising. As they earn good wages I had some difficulty in getting good men to work on the survey for the wages paid by the Department. The season was not suitable for this kind of work as there was too much snow and cold weather. I was in the field from January 17 to November 11, during which we experienced weather ranging from  $45^{\circ}$  below zero to  $75^{\circ}$  above. We suffered from cold during the winter as we were surveying in open country. During the summer we worked nearly all season in water from six inches to three feet deep, so that it is not to be wondered at if I was compelled to be continually hiring men. I have never seen such a severe winter and late spring; the ice was solid on lake Manitoba till June 10, and the summer was so wet that the men could not stand work more than a month.

These marshes are covered with long reeds from eight to twelve feet high. These had to be cut with scythes which made the work slow and tedious. After opening and chaining the lines I was compelled to haul on sledges posts about eight feet long and six inches square to mark the section corners in accordance with your instructions, often having to cut through four feet of ice before reaching the ground.

Settlers cut timber along parts of the sandy beach of lake Manitoba. This seemingly renders the shores lower at these parts, allowing the water to inundate good land on sections south of the lake.

About the end of March water covered the ice so that it was impossible to survey township 15, range 4. I accordingly moved my camp to township 18, range 4.

The township is suitable for stock raising. There is a creamery here and cream is shipped twice a week to Winnipeg where it commands a high price. Most of the settlers are Icelanders, who appear to neglect farming except raising vegetables and potatoes.

On May 17, I left this township for Sewell where I retraced the north boundary or Spruce Woods forest reserve. The surface of this reserve is composed of sandy hills and muskeg and is unfit for farm land. The timber has been completely cut or swept by fire.



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From Sewell I returned to Deer Horn on June 6, to make a retracement and restoration survey of township 21, range 5, and finding an error of five chains on the west side of section 6, I made a new survey of the whole township. Poplar and scattered spruce were found on every section. During a dry season hay is plentiful and of good quality, but irrigation is necessary to ensure a good crop. There is no cultivated land in the township. The soil is black loam with sand and gravel subsoil. The township is about one-third hay marsh, the remaining two-thirds being covered with poplar, spruce and willow.

From here I moved camp to township 22, range 6, and completed the retracement of this township on September 4. The settlers here are almost all of Swiss origin. The west part of the township is covered with thick bush consisting of poplar, eight to eighteen inches in diameter and scattered spruce twenty inches in diameter, while the east part is covered with young poplar, hay marsh, muskeg and lakes. There are no streams and the surface is so level that in wet seasons settlers are compelled to cut hay in the water. The soil is a black loam with sand and gravel subsoil.

I made retracements of townships 22, ranges 4 and 5, which were almost covered with water, and then retraced the Colonization road northwest to Teulon, which occupied us till October 31.

On November 1, I returned to Teulon, stored the outfit with Mr. W. McKinnell, paid off my party and started for home, arriving there on November 11.

I have the honour to be, sir,

Your obedient servant,

C. E. BOURGAULT, *D.L.S.*

## APPENDIX 18.

### REPORT OF P. A. CARSON, *D.L.S.*

#### TRIANGULATION SURVEYS IN THE RAILWAY BELT OF BRITISH COLUMBIA.

OTTAWA, March 1, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR.—I have the honour to submit for your consideration the following report of my field operations for the triangulation survey in British Columbia, in connection with the Trigonometrical Section of the Topographical Survey of Canada, for the season of 1907. This report is accompanied by a topographical map, on a scale of six miles to an inch, showing the whole triangulation in the Rocky and Selkirk mountains as it stands at present. The map shows also the topography of that part of the railway belt, British Columbia, which lies north of the Canadian Pacific railway, and west of Blacberry river, that is, the districts drained by Blackwater creek, Bush river, Gold creek and Sixmile creek. The topography and the positions of the important features have been determined by means of triangulation, track surveys, photographs, and miscellaneous information, and names have been given to the principal mountains and streams.



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I left Ottawa on June 7, for Golden, British Columbia, where my outfit had been stored at the close of the previous season. My horses I found in excellent condition after a very severe winter in the Columbia valley, twenty-nine miles south of Golden. The horses had managed to forage very well in the sloughs along Columbia river, until the approach of spring, when the heavy crust on the snow prevented them from reaching the grass, and it was therefore necessary to give them chopped feed for several weeks. Considering the severity of the winter, which seems to have prevailed throughout Canada, and from some of the reports of the death of horses and cattle on the ranges in other districts, I was well satisfied with this vicinity as a winter range. I purchased two more horses in the Columbia valley at fifty-five dollars each, bringing the number of my horses up to eight.

It was found impossible to obtain skilled packers at the standard wage of two dollars *per diem*, so I was obliged to pay seventy-five dollars per month in order to secure a good man. The remainder of my party was engaged in Golden, only two of last year's quota being available.

## BASE LINE.

I first visited the base line which was established during the season of 1906 in the Columbia valley, twenty-one miles south of Golden. The whole extent of the line was this year cleared out and prepared for final measurement, and the ends of the base were marked in a permanent manner, as described in your instructions.

At 'A,' the southerly end of the base line, which is situated in the northeast quarter of section 16, township 24, range 19, west of the fifth meridian, the end was marked as follows: The true end of the base line is an underground mark, being the intersection of a pair of fine lines in the upper end of a brass bolt, such as is used for marking the triangulation stations. This brass bolt is six inches long and three-quarters of an inch in diameter. It has a flat head one and one-half inches square and one-half inch thick. The bolt was firmly set in concrete, three feet below the surface of the ground (i. e. below the frost line). The head of the bolt was also marked with the letter 'A,' and the words 'End of Base, Canada.' The underground mark was covered with loose earth level with the original surface of the ground.

A set of four witnesses was securely placed in concrete, being iron reference bolts, each sixteen inches long, and three-quarters of an inch in diameter. A cross was marked on the head of each bolt, the centre of the cross in each case being three feet distant horizontally from the geodetic end of the base. These reference bolts bear respectively north, south, east and west from the geodetic point.

At 'B,' the northerly end of the base line, which is situated in the northeast quarter of section 35, township 24, range 20, west of the fifth meridian, the end was marked as at 'A,' except that the head of the bolt bears the letter 'B.' A set of four witnesses were also placed in a similar manner to that at 'A.'

It was deemed undesirable to place a permanent surface mark or monument over the ends of the base, as is generally done in geodetic surveys; but a temporary signal for observing upon was erected at each end of the base, being a triangular wooden pyramid three feet wide at the base, and three feet six inches high. The signals were covered with white cotton to assist in clearness of vision.

Each end of the base was accurately tied to the neighbouring survey posts of the Dominion system of survey, and a plot of ground, one chain square, is to be reserved at each end of the base for the purposes of the triangulation.

## PROJECTION OF BASE LINE.

In order to project the base line of five and one-quarter miles extent, to the main triangulation, in which the sides of the triangles are from fifteen to twenty miles long, a set of three secondary stations was established, viz.: station 'C,' on Beaver-



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foot range, opposite the base line, station 'D,' on a wooded ridge on the west side of Columbia valley, opposite the base line and station 'E,' on the summit of Kapristo Mt. near the northerly end of Beaverfoot range. By means of these three stations the base line is connected with station '17' (Mt. King), station '20' (Beaverfoot) and station '21' (Spillimacheen) of the primary system.

## STATION C.

Station 'C,' for the projection of the base line, is on the summit of the Beaverfoot range, at an altitude of about 8,000 feet. The mountain is easily reached by means of a pony trail running from Columbia valley wagon road, at a point near Biebernitz's ranch. This trail leads up the side of the mountain, and horses lightly packed may be easily taken to timber line. The station is marked with the usual brass bolt securely cemented in a hole drilled in the rock. The top of the bolt is stamped with the letter 'C,' followed by a triangle. The apex of the triangle is at the centre of the bolt, faces north, and is the geodetic point. Three reference bolts were also firmly cemented in the rock, each being six feet horizontally from the geodetic point, and bearing respectively north, south and west from it. Directly over the brass bolt a conical stone cairn was erected, four feet in diameter at the base, and six feet high. The cairn tapers to a point at the top, which is vertically over the geodetic point. White cotton was wound around the cairn to serve as a signal.

## STATION D.

Station 'D,' for the projection of the base line was established on a wooded ridge on the west side of the Columbia valley, opposite the base line. The station is just south of the pass leading from Carbonate Landing to Spillimacheen valley. A spot on the ridge was cleared of timber so as to give unobstructed vision towards both ends of the base, and towards stations 'C,' 'E' and '21.' The station was marked by means of the usual brass bolt, cemented in a hole drilled in solid rock, twelve inches below the surface of the ground. The head of the bolt was stamped with the letter 'D,' followed by a triangle. The apex of the triangle which is at the centre of the top of the bolt, faces north and is the geodetic point. Directly over the geodetic point was erected a wooden signal, in the shape of a tetrahedron, five feet high. The signal was covered with white cotton to assist in clearness of vision.

## STATION E (KAPRISTO MT.).

Station 'E,' the third station for the projection of the base line to the main triangulation, was established on July 10, on the summit of Kapristo Mt. (altitude 8,900 feet), one of the most northerly and highest peaks of the Beaverfoot range. The station was reached via an old smugglers' trail leading from Carbonate Landing to a high pass over the Beaverfoot mountains. At one time the trail led down into the Beaverfoot valley, but has fallen into disuse since the building of the Canadian Pacific railway and is impracticable for horses. From this pass above timber line the summit of the range was followed northerly until Kapristo Mt. was reached, overlooking the town of Palliser, on the Canadian Pacific railway. Angles were read towards station '17' (Mt. King), station '20' (Beaverfoot), station '21' (Spillimacheen), and stations 'C,' and 'D.' The station was marked in a permanent manner with the usual brass bolt firmly cemented in a hole drilled in the rock. The flat head of the bolt was stamped with the letter 'E,' followed by a triangle, with its apex at the centre of the top of the bolt. The apex of the triangle faces north and is the



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geodetic point. Directly over the geodetic point a conical stone cairn was erected five feet in diameter at the base, one foot at the top and six feet high. The top of the cairn is vertically above the geodetic point. Four reference bolts were also securely cemented in the rock, each being six feet horizontally from the geodetic point, and bearing respectively north, south, east and west from it. White cotton was wound around the cairn to act as a signal.

While we were on the summit of Kapristo Mt. establishing triangulation station 'E,' an electrical storm came from the northwest and we were soon enveloped in heavy dark clouds. A strange buzzing sound was heard, which seemed to proceed from our alpenstocks which we had placed in an erect position in the rocks. Then our faces commenced to tingle, as though swept by innumerable cobwebs, and our hair rose and fell from our scalps. A most peculiar tingling sensation pervaded our whole bodies and we looked at each other with half fear, half laughter on our faces, not knowing what to make of the situation. However, I decided to go ahead as though nothing strange were occurring and laid my hand on the metal of the theodolite. A sudden shock almost knocked me off my feet, and the smothered exclamation from my lips finished the oozing remnants of bravery which the others were displaying. In less time than it takes to tell it, all three were seeking shelter beneath some overhanging rocks fifty feet below the summit, and each one, I am sure 'searching his soul for sounds to tell how scared he was.' The storm, however, passed as quickly as it came and we resumed work at the station.

## STATION 20 (BEAVERFOOT.)

On June 26, I visited station '20' in order to learn whether I could move it a little farther north and still see station '14' (Storm Mt.), and also to locate a suitable position for station 'E.' Even at this late day in June the snow of the past winter lay far below the timber line, while the peaks were so deep in snow that the cairns on Storm Mt. and Mt. King were completely invisible. I destroyed the markings for station '20' and subsequently erected a new station on the mountain immediately north of the old one. The markings for the new station are the same as before, except that only three reference bolts were placed. Each witness is distant six feet horizontally from the geodetic point and they bear north, south and west from it. The cairn is five feet in diameter at the base and eight feet high.

## STATION 21 (SPILLIMACHEEN.)

Station '21' was established in 1906 on the peak where Mr. W. S. Drewry, D.L.S., had placed a cairn fifteen years before. It was afterwards discovered that the location was unsuitable for a triangulation station, as the cairn is invisible from any of the peaks in the vicinity of Battle Creek. Consequently in 1907 this station '21' was removed to a higher and more commanding peak a couple of miles westerly, in the same range of mountains. From the new station also a location for station '24' was determined upon, to take the place of the cairn called 'Battle Creek' and the magnificent mass of Mt. Sugarloaf was picked out. The mountain on which station '21' is situated may be reached either from the north or middle forks of Spillimacheen river, although probably the easier ascent may be made from the latter. If however it is desired to visit station '22' (north fork) directly afterwards, a saving of time is made by travelling via the north fork trail.

## STATION 19 (MT. LAUSSEDAT).

The station established by Mr. W. S. Drewry, D.L.S. on the westerly side of Blaeberry river was afterwards discovered to be unsuitable for the continuation of the triangulation westward. Consequently in 1907 I destroyed station '19' (Blaeberry) as situated, and placed the station on Mt. Laussedat, altitude 10,000 feet),



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about three miles in a northeasterly direction from the old station. Mt. Laussedat is a high and prominent mountain commanding the Blaeberry and Waitabit valleys. The mountain may be reached from either of these although perhaps the more easily from the former. The ascent of Mt. Laussedat is by no means an easy one, for in the upper heights are several reaches of almost sheer rock. Our camp was placed on the left or east side of Blaeberry river, about fifteen miles from Moberly, and several miles above Blaeberry canyon and falls. Here we built a foot-bridge over a narrow part of the river, and with packs on our backs ascended a ridge leading northwest towards Mt. Laussedat. We bivouacked at timber line, and the following morning commenced the ascent of the main mountain. After some difficult rock climbing, and an ascent up an almost precipitous snow couloir occupying five hours from timber line, the summit of Mt. Laussedat was reached.

Station '19' is marked in the usual way with a brass bolt set in cement in a hole drilled in the rock. The top of the bolt is stamped with the Roman numerals XIX, followed by a triangle having its apex at the centre of the head of the bolt and pointing north. The apex of the triangle is the geodetic point. As reference marks there were drilled in the solid rock two holes, one due south of the geodetic point and distant six feet horizontally from it and the other due west of the geodetic point and four feet six inches horizontally from it.

Over a brass bolt a conical stone cairn was built, four feet in diameter at the base, one foot at the top and six feet high. The top of the cairn is vertically above the geodetic point.

While on the summit a snowstorm set in which made it exceedingly disagreeable and cold during the enforced stay at the top. The descent to timber line was made in four hours, being rather hazardous on account of the falling snow. Our trip up the Blaeberry occupied eight days, from July 15 to July 22 and five of these were rainy.

#### STATION 28 (BLACKWATER.)

Station '28' (Blackwater) is reached from the old town of Donald, on the Canadian Pacific railway by way of the Government pack trail from Donald to the Big Bend of Columbia river, and Tete Jaune Cache, near the Yellowhead pass. The trail crosses Waitabit creek by means of a bridge about a mile north of Donald, then follows a northwesterly course for four and one-half miles to a point on Bluewater creek about three miles from its mouth. A bridge crosses the Bluewater just where Blackwater creek falls into it, and the trail ascends Blackwater valley. The first three miles of trail are on the left or east side of the stream when the trail crosses and follows up the right bank for seven miles to a point opposite Blackwater lake. Here we descended on a branch trail to the level of the lake and camped at its southerly end. The lake is about one mile in length north and south, about three hundred yards wide and empties into Blackwater creek. Its elevation is 3150 feet. It teems with fine rainbow or mountain trout from six to eighteen inches in length. From Blackwater lake an old miners' trail leads northeasterly up Blackwater creek, coming from between the two most southerly mountains of Blackwater range. At timber line an old deserted mine is reached, from where the ascent to Blackwater Mt. is easily made in three hours (altitude 9000 feet.) This mountain is one of the highest peaks of Blackwater range and indeed of the district drained by Waitabit, Bluewater and Blackwater creeks. It commands an unobstructed view easterly towards Mts. Laussedat, Mummery and Freshfield, and northerly, across the Bush valley towards the lofty Lyell, Bryce and Columbia groups. To the south and west lies Columbia river, with the monarchs of the Selkirks beyond.

Station '28' is marked in the usual manner for primary triangulation stations with a brass bolt securely cemented in a hole drilled in the rock at the summit of the mountain. The head of the bolt is stamped with the Roman numerals XXVIII,



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followed by a triangle with its apex at the centre of the head. The apex of the triangle faces north, and is the geodetic point.

As witnesses there were set in cement three iron bolts, each six feet horizontally from the geodetic point, and bearing respectively east, south and west from it. A conical stone cairn was built with the centre of its base directly over the geodetic point. Its dimensions are six feet in diameter at the base, one foot at the top and seven feet six inches high. White cotton was wound around and securely wired to the cairn to serve as a signal.

Mosquitoes were very troublesome at Donald and all through Bluewater and Blackwater valleys, although at the lake we had a short respite from their onslaughts on account of the light breeze which generally blows down the lake. There is some excellent timber in Bluewater, Blackwater and Waitabit valleys, most of which is under license; there is also a quantity of low grade galena and copper ores.

## STATION 29 (BUSH RIVER.)

From Blackwater lake the main trail continues for two and one-half miles to a low swampy pass (altitude 3,150 feet) and there swings to the easterly side of several small beaver lakes which form the headwaters of Succour creek, flowing northwesterly. For eleven miles the trail follows the right bank of Succour creek, finally striking Bush river crossing about a mile and a half in a straight line from the mouth of that river. This point may also be conveniently reached in canoes by descending Columbia river from Beaver mouth.

Bush river empties into the Columbia from the east, about twenty-two miles below Beaver mouth railway station. It is a glacial stream some two hundred feet wide near its mouth, flowing at the rate of three and a half miles an hour. During the months of July and August the river carries an immense quantity of water being fed by the large glaciers of Freshfield, Lyell, and Bryce groups. For a distance of three miles from its mouth the river flows in a westerly direction through low flat lands, which are mostly inundated during July and August by the high waters of Columbia and Bush rivers. Higher up, Bush river runs from the northeast with numerous side-channels flowing through shingle flats; the valley is about half a mile wide and the slopes of the mountain on each side are covered with dense spruce and fir timber. Bush river is navigable with canoes and small boats for a distance of thirty miles, although during the upper twenty miles poling must be resorted to, as the current from the mouth of Chatter creek (locally called Callahan creek) to the forks of Bush river is nearly five miles an hour. The whole of Bush river almost to the forks lies within the railway belt.

Owing to the low inundated lands of Columbia valley near the mouth of Bush river, and the numerous hay meadows and lakes up Bush valley, this vicinity is scourged with mosquitoes and black flies during the greater part of the summer. Messrs. Collie and Stutfield, who explored this district during 1900 thus describe it in their book 'Climbs and Explorations in the Canadian Rockies': 'The weather was now very hot and sultry and that evening swarms of the most voracious mosquitoes we ever encountered drove us nearly crazy. The men said they had occasionally seen them more numerous on the prairie, but that never in their lives had they known them anything so vicious or venomous. They lost no time in buzzing or fooling around, but went straight to business with their beaks until our faces and hands were one mass of bites . . . The night was a night of unending torment for at this lower elevation (about 2,500 feet) the insects do not go to sleep after sundown, as in the higher regions of the eastern Rockies.'

On the north side of Bush river near the crossing are two lakes, each about half a mile long, which I have named Cygnus lakes from the white swans that are generally to be seen upon them. These lakes are also the haunts of wild duck and geese in the autumn and besides teem with magnificent salmon trout, which are easily



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caught. In the river itself charr, ling and squaw fish are found. Black bears, are plentiful along Bush river, and goat on the mountains; a few marten, wolverine, coyote, lynx, caribou and white-tailed deer may also be found. There is no mineral of any account in this vicinity. It would be desirable to establish the limit of the railway belt up Bush river, on account of the valuable timber in the valley, and along the tributaries of the river, for at present there is great uncertainty amongst timber cruisers as to the exact position of the belt boundary.

Station '29' (Bush River) was established near the north limit of the railway belt on the summit of a mountain distant about four miles north of Bush river crossing. We placed our camp on the south side of the river at the crossing, where we found an old galvanized iron boat, which had been placed there by the provincial government for the convenience of travellers on trail. Crossing the river we set out with instruments and packs up a hog's back between the two Cygnus lakes. 'At timber line we set a fly-camp, and the next morning (September 24) we finished the ascent to the desired peak. The station was marked in the usual manner with a brass bolt cemented in a hole drilled in the rock. The flat head of the bolt was stamped with the Roman numerals XXIX, followed by a triangle with its apex at the centre of the head of the bolt. The apex of the triangle faces north and is the geodetic point. Four reference bolts were also securely cemented in the rock, each being distant six feet horizontally from the geodetic point, and bearing respectively north, south, east and west from it. Directly over the brass bolt a conical stone cairn was erected six feet in diameter at the base, one foot at the top, and nine feet high. The top of the cairn is vertically above the geodetic point. White cotton was wound around and securely wired to the cairn to assist as a signal. From station '29' a magnificent view is obtained to the north and east of those grand mountains of the main range, Mts. Columbia, Bryce, Alexandra, Lyell, Bush peak, Forbes, Freshfield and Mummery.

#### STATION 24.

During the season of 1906 a visit was made up Battle creek, a confluent of Incomappleux river, to establish station '24,' near where Mr. W. S. Drewry had set his 'Battle Creek' cairn in 1892; but it was found that no suitable location could be obtained to connect with station '21' (Spillimacheen) and station '22' (North Fork). I decided therefore that any attempt to extend the system of triangles across the summit of the Selkirks by sighting through a gap or gaps between the mountains would be futile and that it would be necessary to fix station '24' on one of the summit peaks of the Selkirk range, Sugarloaf Mt., was accordingly picked out as a desirable location, and a trip was made up the valley of Beaver river in order to ascend that mountain.

The horses and outfit were shipped from Donald to Bear Creek by rail, as there is no trail between these points, the railway here crossing many streams and rivers by some of the highest arches along the line. Bear Creek railway station is a flag station at an elevation of 3,670 feet, clinging to the side of the Hermit mountains along which the railway winds as it approaches Rogers pass. Some pickings of grass may be foraged along the railway track, but it is a dangerous spot for horses, it being necessary to herd the animals carefully in the daytime and tie them up at night to prevent accidents from passing trains. Consequently an immediate start was made from Bear Creek station (August 2) down the pack trail which leads to Beaver river, 800 feet below. About a mile and a half from the railway the trail crosses Beaver river by a bridge, then follows up the right (or east) bank of the river for a couple of miles, where it makes a turn up the north side of Grizzly creek. Here the trail branches, one fork ascending Grizzly creek to connect with the north fork of the Spillimacheen river, while the right hand trail crosses Grizzly creek by means of a bridge and ascends Beaver valley. The trail runs in a southeasterly direction along the east side of the river for about twenty-three miles to the head of the river,



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and crosses a low pass (altitude 4,700 feet) into the valley of the Duncan. Beaver trail is now in bad condition, being littered with windfall, necessitating the constant use of axes in order to make it passable for the pack horses. About six miles from the Grizzly bridge the first swamp or meadow is reached, where feed may be obtained for horses, then during the remainder of the distance there are many swamps and meadows, which however at high water make the trail very disagreeable for travelling, and it is an open question which is the worst, the swamps or the windfall.

As progress is made along the Beaver valley, openings in the dense forest allow occasional glimpses of the black and white precipitous mountains which line the western side of the valley. These rise to a height of over 10,000 feet, and their sheer dark masses form the easterly confines of the extensive Illecillewat and Deville *névés*; and I may add that this view of Mt. Sir Donald and the other majestic peaks of the Selkirks is much grander than that seen from the Canadian Pacific railway on the western slope. On the left or easterly side of Beaver valley Bald mountain lifts its long undulating height scarcely above timber line.

Beaver river, which rages and races through canyons and rapids in its lower reaches, soon becomes much smaller as its many glacial feeders are passed, until at the summit between Mt. Beaver and Mt. Duncan, the river commences its flow from the broad Beaver glacier, which extends its tongue into the very valley. Here, too, from the Duncan glacier only a short distance beyond, Duncan river takes its rise, flowing southward. About three miles from the pass or about twenty-three miles from Bear Creek railway station, one of the largest confluent of Beaver river, enters from the west, being a stream about fifteen feet wide, and only a mile long coming from the enormous Grand glaciers, which lie in the cold bosoms of Sugarloaf and Grand mountains.

Although Sugarloaf mountain seems to lie quite close to the pass, it is more easily reached via Grand glacier. Consequently we pitched our main camp on the bank of Beaver river, and taking instruments and packs ascended the south branch of Grand glacier to an altitude of 6,800 feet, where we bivouacked on a small timbered slope beside the glacier. The following morning we ascended the glacier to an altitude of 9,000 feet, making only slow progress over its rough icy surface and around its many wide crevasses. After climbing steadily for several hours the morning turned cloudy and fine rain and sleet commenced to fall. We soon realized that further advance would be but a waste of time so returned disheartened to our fly-camp. Then followed five days of steady rain, during which time the whole vicinity was shrouded with dense clouds, and we were never able to discern objects more than a hundred yards away. On August 19, it began to clear so the following morning before daybreak we once more attempted Sugarloaf. This time, however, instead of ascending the glacier we stuck to the rocky cliffs leading directly to the desired peak. After a steady but by no means difficult climb of six hours, almost entirely over ice and snow, we reached the summit (altitude 10,700 feet). A temporary cairn was erected for station '24,' but we could not set the permanent brass bolt on account of the depth of the snow. The descent to our fly-camp was made in four hours with many exciting glissades down almost precipitous snow fields. The next day we returned to our main camp in the Beaver valley.

Although the geographical position of Sugarloaf mountain is a good one for a triangulation station, it is not a perfect location by any means. Owing to the heavy precipitation in this locality, and the consequent enormous areas of ice and snow, glaciers and *névés*, it is only on rare occasions that a perfectly clear day can be obtained for observing and reading the angles necessary for triangulation work; while signals set on peaks in this district are also but rarely visible from adjacent stations.

From our camp near Grand glacier we returned to Bear Creek station in two days, although the trip in had taken over four days. The whole trip occupied twenty-two days, of which eighteen were rainy.



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There is some very fine timber up the Beaver and Duncan valleys, fir, spruce, cedar and hemlock. Large deposits of iron pyrites exist in the mountains on the west side; also some copper and traces of gold on the eastern side towards the head of Beaver valley. Game is somewhat plentiful, consisting of caribou, deer, marten, wolverine, and bear, while goats are numerous on the mountains to the west.

## STATION 30.

That portion of the railway belt which lies north of Beavermouth and west of Columbia river had never up to this time been explored or mapped, so a visit was made into this district to establish triangulation stations and at the same time to prepare a topographical map of the country by means of triangulation, photography and track surveys.

Start was made from the Sixmile Creek railway siding, where the united north and south branches of Sixmile creek enter Beaver river from the west, about four miles from the mouth of the latter. Both valleys of Sixmile creek flow rapidly through narrow valleys between the mountains, and a route up either stream is impracticable for horses. Several years ago a prospector made a trail up the north branch for several miles, in order to tap some rich mica deposits which he had located and staked there, but nearly all traces of the trail have been obliterated by slides and fallen timber.

Between Columbia river and the north branch of Sixmile creek, a long ridge extends from the northwest, its southerly hog's back reaching in a point to the siding at Sixmile creek (altitude, 2,600 feet.) This ridge was swept by fire several years ago, and it now stands grey and black with the burnt remnants of once valuable timber. Up this long hog's back we cut our way through *débris* and *brulé*, the horses with light packs following slowly up the steep incline. After advancing in a northerly direction for about three miles an elevation of 6,000 feet was attained, and here the going was comparatively easy through the sparse timber and undergrowth of this altitude. Camp was pitched on a pleasant spot where the first water was found, the horses finding plenty of grass in these high lands. We continued our advance in a northeasterly direction through narrow passes at timber line, then along the level ridge termed 'The Esplanade,' on the westerly slope of the Esplanade range, lying between Sixmile creek and Columbia river. On our left the north branch of Sixmile creek lay several thousand feet below, while beyond rose some of the highest peaks of the Selkirks, 'Iconoclast,' 'Sorcerer,' 'Seraph,' 'Cherub,' 'Ventego' and 'Pearce.'

A secondary station No. '30A' was established on a peak of the Esplanade range, Cupola mountain, so called on account of the shape of its rocky summit. Angles were read, photographs were taken, and other information derived for topographical purposes. Advance was continued along the easterly slope of the north branch of Sixmile creek, and a gradual descent made to the head waters of that stream where we crossed a narrow snow pass, and reached the head of Spinster creek flowing northerly into Gold creek. From the pass we advanced for about a mile, dropping down several hundred feet, and pitched camp beside a small alpine lake, (Sunbeam lake).

Secondary station '30 B' was established on Sentry mountain (altitude, 7,500 feet), which is the most northerly mountain of the Esplanade range, and overlooks the mouth of Gold creek and Bush river valley.

From station '28' (Blackwater) and subsequently from Sentry and Cupola mountains, a high mountain since named Mt. Sandford, has been picked out as an excellent position for primary station '30.' This mountain lies near the north limit of the railway belt, in township 31, range 28, west of the fifth meridian, and is situated between Gold creek and Novelist creek. To reach this mountain, we therefore took packs on our backs (horses being of no further use), and crossed over a range



## SESSIONAL PAPER No. 25b

of mountains to the west of our camp. We then descended some 4,000 feet into the valley of Bachelor brook or south branch of Gold creek, a rapid mountain stream about thirty feet wide. This creek flows through a narrow valley from the southwest and obtains its water from snow and ice in the very heart of the Selkirks, and empties into the main branch of Gold creek, about fifteen miles from the mouth of the latter. We made a difficult crossing over the swiftly flowing Bachelor brook, by means of an improvised foot bridge, and finding that progress was extremely slow through the dense timber along the banks of the creek, we ascended to timber line of Sonata mountain, the mountain lying between Bachelor brook and Gold creek. From Sonata mountain we soon discovered that we were still a long way from Mt. Sandford, and that that mountain, alas, was covered with fresh snow. We established a secondary station, '30 C,' on Sonata mountain (9,000 feet) then returned to our main camp, after an absence of five days, during three of which it had rained. A heavy snow storm now set in, which covered the whole district with nearly a foot of snow, so we returned to the railway at Sixmile Creek siding. A topographical map of that part of the railway belt in the vicinity of Gold creek and Sixmile creek has been prepared, with names for the important mountains and streams.

Gold creek enters Columbia river from the west, near the mouth of Bush river and is a rapid glacial stream, which during the months of July, August and September, carries an immense volume of water. Although a reconnaissance was made up Gold creek at the time of the preliminary surveys for the Canadian Pacific railway, no trail exists up the valley, which is at present impracticable for horses. There is much valuable timber up Gold creek, and its many confluent which has not yet been taken up. There is very little mineral of value in the vicinity despite the suggestive name of the stream. Rich deposits of amber and white mica exist all through the Selkirks from Sixmile creek to the 'big bend,' and although some claims have been staked and recorded, the mines have not been developed.

## NOTES ON THE WEATHER.

The winter of 1906-7 which was such a severe one all over Canada was none the less so in the Rocky and Selkirk mountains, and the snowfall was especially heavy. The spring too was late and even in the last week of June, the snow still lingered below timber line. It was not until after the first week in July that the higher peaks became at all free from their many feet of snow, so that the cairns and signals of the triangulation survey were visible. After such a winter it was of course expected by all that the summer would make amends but in this we were greatly disappointed. Some very warm weather was experienced it is true, but on the whole the summer was the wettest for many years, the only compensation being the lack of forest fires which are generally such a curse, especially during the month of August. The mosquito pest was worse than usual, and we were troubled with that scourge from June until the end of September. Of course it must be realized that weather conditions are often judged from different view points, and that many days which are termed 'cloudy' by a mountain surveyor, are called 'fair' by residents of the valleys, for the clouds which obscure the mountain peaks and the surveyor's signals serve to make the days more pleasant to the sojourners in the valley.

During the latter half of June in Columbia valley there were nine fair days (all of which were very warm and sultry,) one cloudy day, and five days of rain. In the month of July, in Columbia, Blaeberry and Blackwater valleys we had fifteen fair, two cloudy and fourteen rainy days. In August in Beaver valley it rained on twenty-one days (with snow on the peaks) and of the remaining days six were fair and four cloudy. During September in the valley of Gold creek, and the vicinity of Bush river, thirteen days were fair, three cloudy and fourteen rainy, with some heavy snowfalls even at the low altitude of 5000 feet. The month of October was exceptionally



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fine in Columbia valley, being free from severe storms, and very little snowfall on the mountains. Although the reports on the weather give only four rainy and five cloudy days, the conditions were not suited to triangulation work. A heavy mist obscured the whole valley and the neighboring mountains every morning and it was unaffected by the rays of the sun until nearly eleven o'clock at which hour the banks of fog lifted only to cling tenaciously to the cold mountains. Then at four in the afternoon as the sun settled below the western hills the mist descended once more in a dense mass.

The water in Columbia river during the summer months was lower than usual, which goes to show that the amount of extreme heat especially in the early summer was less than in other years.

## GENERAL NOTES.

The west boundary of Yoho Park reserve has recently been altered by Order-in-Council, and instead of following the meridian between ranges 19 and 20, west of the fifth meridian, from the summit of the Beaverfoot range to the south limit of the railway belt, it now runs southeasterly along the summit of the said range of mountains to the limit of the belt. This change throws open to settlers a goodly portion of fruit and farming lands, and already advantage has been taken of it by homesteaders and purchasers. At present only the bottom-lands in the Columbia valley are at all under cultivation, and but few attempts have been made to thoroughly test the possibilities of this district for producing the hardy and small fruits, although the results of most endeavors have been eminently satisfactory. Besides the bottom-lands, however, there is a large area of excellent bench-lands suitable for fruit farms extending back to the main mountains, but these lands will need considerable clearing, a task, however, which seems to require more energy than the easy going ranchers of the valley have at their disposal. A great portion of the said bench-lands is comprised within timber-berths, which have been stripped of their best timber, except that suitable only for railway ties. Should these lands be desired at any time for farming purpose they could be expropriated from the timber-berths without any serious loss to the lumber companies. However, until the much delayed Kootenay Central branch of the Canadian Pacific railway is constructed there will be very little activity in this district, either in agriculture or mining.

I have the honour to be, Sir,

Your obedient servant,

P. A. CARSON, D.L.S.

## APPENDIX NO. 19.

## REPORT OF WILLIAM CHRISTIE, D.L.S.

## SURVEYS OF BASE LINES IN THE PROVINCE OF MANITOBA.

CHESLEY, ONT., March 27, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit the following report of my surveys during the season of 1907.



## SESSIONAL PAPER No. 25b

On April 17 I received your instructions dated April 15, to survey the eighth base line across ranges 10, 11, 12, 13 and 14, and the ninth base line across ranges 10, 11, 12, 13, 14, 15, 16, 17, 18 and part of 19 all west of the principal meridian.

I was delayed in starting for the work owing to the fact that the six-inch transit which I had ordered from the Department did not arrive until May 27.

On May 29, I left Chesley and on June 1, arrived in Winnipeg, where I was to organize.

On June 6, I went to Winnipegosis and purchased a sail boat as instructed. I also purchased five pack horses.

On June 8, I returned to Winnipeg and on the 10th went to Teulon, where I disposed of the wagon, buckboard and harness belonging to the outfit used by me last year. The rest of the outfit, together with two additional horses purchased at Teulon, I shipped by rail to Winnipegosis in charge of a member of my party.

Returning to Winnipeg I completed the organization of my party and left on the 13th for Winnipegosis, where we pitched camp on the 14th.

We were delayed here until the 21st waiting for the boat to be rigged and for supplies to arrive from Winnipeg. We would scarcely have been able to start earlier even had we been prepared, as the lake was not clear of ice until about that date. On that date, however, having sent five men across country with the pack horses, we loaded the outfit and supplies on the boat and proceeded across lake Winnipegosis, down Waterhen river to Waterhen lake, and thence continued down Waterhen river to lake Manitoba. We met the pack horses at a ranch on the west shore of lake Manitoba on section 16, township 29, range 15. Here we left the boat and most of the supplies, and moved with pack horses to the northeast corner of township 28, range 15. From this point the line was run easterly across ranges 14, 13 and part of 12 to the western shore of lake Manitoba.

This portion of the line was completed on July 8. As I had no further need of the horses on this line, I sent two men to take them down to The Narrows in anticipation of having them taken by steamer to Gypsumville, which was the most convenient point to the northeast corner of township 32, range 10, at which point the survey of the ninth base line was to be commenced.

On July 9, having had the boat brought around to the line, we crossed the lake and camped on the east shore in township 29, range 10. I found that the portion of this line across range 10 as far as the east shore of the lake had already been surveyed.

On July 10, I went to Gypsumville and arranged with the Manitoba Gypsum company to have the horses taken across the lake to Gypsumville by one of the company's steamers. I began the survey of this portion of the eighth base at the northeast corner of section 33, township 28, range 10. By July 24, the line was completed across ranges 10 and 11 and connection made with the portion of the line on the west side of the lake.

On July 25, I started for Gypsumville with the outfit. Arriving there on the 26th I found that the horses had not yet arrived. They reached there on the 29th and on the 30th we left Gypsumville. On August 2, we camped on section 1, township 33, range 10, and began the survey of the ninth base line at the northeast corner of township 32, range 10.

I used pack horses to move across ranges 10, 11, 12 and 13, as far as Boggy creek, which crosses the line in section 35, township 32, range 13. From here to the end of the line I used the boat exclusively for transporting the outfit and supplies, the country through which the line passes being so swampy as to be almost impassable for horses. At some time it was with difficulty that the horses, without loads of any kind, were kept up with the camp. The horses also suffered greatly from swamp fever and foot-rot; so much so that up to the time of completing this line, five of them died. Considerable time was lost in moving camp, cutting roundabout trails to avoid swamps while moving with horses, and on account of the roundabout route to be taken when moving by boat on the lakes and rivers. When I reached the east shore of lake



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Winnipegosis I left the horses in the care of Mr. Adam, rancher and fisherman, until the completion of the line on September 25.

I then crossed the lake and ran the line east from the northeast corner of section 32, township 32, range 19.

On October 8, I completed this line by connecting the two portions across lake Winnipegosis. The error in longitude of closing across the lake was 17.82 chains.

On October 9, I returned to Winnipegosis and received your instructions to survey the tenth base line easterly across lake Winnipegosis to the east boundary of range 15, the principal meridian across townships 26, 27 and 28 and the eighth base line across ranges 1, 2, 3, 4 and 5. I made inquiries regarding the time at which navigation usually closed on the lake, and the nature of the country adjacent to the lake, through which the tenth base line would pass. From the information received I concluded that it would not be advisable to attempt to make the survey of the tenth base line at that time. I telegraphed you accordingly, and in reply was instructed to proceed with the survey of the principal meridian and the eighth base line.

I accordingly shipped the outfit by rail to Teulon. Here I purchased three wagons, three sets of harness and another horse, with which to move the outfit and supplies out to the starting point, a distance of about seventy miles by the route taken. This route followed the colonization road from Teulon to Icelandic river. The trail crosses Icelandic river in township 23, range 1, east of the principal meridian. From here a trail leads north across townships 23, range 1, east of the principal meridian, and 24 and 25, range 1, west of the principal meridian, to Fisher river, where some settlers have located in township 25, range 1, west of the principal meridian. The roads were in such condition, owing to the unusually wet summer, as to be almost impassable. And I found that the loads were altogether too heavy for the horses I had. Having got as far as township 21, I hired a team of horses and two teams of oxen, thus reducing the loads for each team by one-half. On October 31, we reached the settlement mentioned above and the freighters returned home.

From here we cut a road to the meridian and camped on section 12, township 26, range 1, west of the principal meridian. In cutting this piece of road we had to make a wide detour to avoid swamps. On November 5, I began the survey of the principal meridian at the northeast corner of township 25.

When I reached Fisher river with the survey, the horses were in such a condition that I saw clearly that they would not be able to endure the remainder of the survey, as it was impossible to provide proper food in sufficient quantities along the lines. Two of them had already died since commencing this line. I therefore decided to resort to man packing for the remainder of the survey. I left the horses and as much of the outfit as possible in care of Mr. E. Rogers, who has a ranch on Fisher river, in township 28, range 1, west of the principal meridian. I then began the survey of the eighth base line, which I completed on December 28.

I had previously arranged to have some Indians come in with dog trains to move the outfit back to Fisher river. They arrived at the camp with five dog trains on the 29th and on the 30th we started for Fisher river, where we arrived on the 31st.

As there was now about a foot of snow on the ground, I thought we would be able to travel much faster with sleighs than with wagons. I therefore exchanged one of the wagons for two sets of bobsleighs. I also hired another team to help move the outfit back to Teulon, where we arrived on January 9, 1908.

I stored the outfit with W. C. McKinnell, of Teulon, who also contracted to winter the remaining six horses. On the following day I returned to Winnipeg, discharged my party, and arrived in Chesley on January 14.

Throughout the whole of the region traversed during the season's operations good water was found in abundance, much of the country surveyed being under water at the time of the survey. Practically the whole of the region traversed is too low and wet for farming purposes without considerable draining. Big game, parti-



## SESSIONAL PAPER No. 25b

cularly moose, is plentiful throughout the whole of the region traversed. Some jumping deer were also seen on the east shore of lake Manitoba on the eighth base line. No minerals of any kind were noticed along the lines surveyed, but gypsum is mined quite extensively in township 32, range 9, west of the principal meridian.

I have the honour to be, sir,  
Your obedient servant,

WM. CHRISTIE, *D.L.S.*

## APPENDIX No. 20.

REPORT OF T. A. DAVIES, *D.L.S.*

## SURVEYS IN CENTRAL ALBERTA.

OTTAWA, FEBRUARY, 28, 1908.

E. DEVILLE, Esq., LL.D.  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit the following report concerning the survey work done in the Edmonton and Lloydminster districts during the season of 1907 in accordance with instructions issued to me on April 16 and September 17, 1907.

On April 17, I left Ottawa for Edmonton and having arrived there proceeded to organize a party for the season's work. This done we left Edmonton and drove to Wetaskiwin; thence we followed the Wetaskiwin and Hardisty branch of the Canadian Pacific railway to a short distance east of Gwynne, where the trail left the railway going in a southeasterly direction through Rosenroll; thence following Battle river and passing through Heather Brae we arrived in township 44, range 19 west of the fourth meridian on May 5.

At this time snow lay on the ground from one to two feet deep and during the first week owing to snow storms work was considerably delayed. After that the snow began to disappear rapidly and weather conditions became favourable for work. This section of the Edmonton district is well settled and opened up with well travelled trails and surveyed roads. Along many of the section lines grading has been done and small bridges built by the settlers.

In each township schoolhouses have been built and are well attended. On Sundays church services are held in them. There is a weekly postal service, the post offices being conveniently placed throughout the district. In connection with the post office there is in most cases a general store to supply the settlers with their several wants.

The country is broken by Battle river valley averaging three-quarters of a mile in breadth, with slopes from one hundred to one hundred and fifty feet in height. The river itself, generally, is two chains wide, varying from two to ten feet deep during the summer season, with a current of approximately two miles per hour. It flows in a southerly direction through this section of the country.

On each side of the valley the country is a first class farming district having an undulating surface with clumps of poplar and willow bush. The clumps of poplar and those of spruce, tamarack and some birch which are thickest in Battle river valley and in Meeting creek and Willow creek valleys, make a sufficient supply for fuel, fencing and building purposes, but are not of large enough extent for lumbering.



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The soil is generally a sandy loam with a clay subsoil, and in some parts a rich black loam.

Coal, which is deposited in pockets along the slopes of Battle river valley is used to a small extent for fuel by the settlers, but it is not in sufficient quantities for mining purposes. Other minerals were not seen. The water is pure and the supply plentiful.

In section 18 of township 41, range 16, west of the fourth meridian there is a small fall of about ten feet on Battle river and this is the only water-power in the district.

Good wild hay is obtainable throughout this country and grows luxuriantly in many parts of Battle river, Meeting creek and Willow creek valleys.

Good crops of wheat, oats and flax are harvested and these are the chief products, although potatoes and all vegetables ordinarily used, are grown successfully.

Cattle ranching, owing to the large number of settlers, is carried on in very few parts and in a small degree.

The settlers are composed largely of men from the United States and eastern Canada with a considerable number of Norwegians and Swedes and a comparatively few Englishmen.

Frost came for the first time during the season about the middle of August, but I understood from the settlers that this was unusually early.

The chief game in the district is duck. There are a few prairie chicken, coyotes and lynx.

Having completed the work in this district on October 1 we drove to Bawlf on the Wetaskiwin branch of the Canadian Pacific railway and from there shipped the outfit to Edmonton and thence by the Canadian Northern railway to Lloydminster. From this place we drove along the mail trail northeasterly to Hewitt Landing post office on the south bank of Saskatchewan river. Here we were ferried across the river and proceeded about five miles down stream to a suitable camping place in township 53, range 26, west of the third meridian, where we were to do retracement and restoration work in accordance with the instructions of September 17.

That part of the country in township 53, range 26, west of the third meridian and north of Saskatchewan river is rough and sandy and broken with small lakes, sloughs, marshes and muskegs. Pipestone creek, which flows southerly along the east boundaries of sections 33 and 28 and here enters Saskatchewan river, divides the north part of the township into two parts by the rough and wooded coulée through which it flows. To the west of this creek large clumps of poplar, spruce and tamarack from two to ten inches in diameter almost cover the country. To the east is rolling with scattered clumps of poplar and willow bush. Farther to the east in ranges 25 and 24, the country becomes higher, and is covered with willow bush and poplar from two to twelve inches in diameter.

The soil is a light sandy loam with a clay and sand subsoil. The water in the creeks is good and pure, but in most of the sloughs and lakes alkaline. Good wild hay grows abundantly, especially along the valley slopes.

Settlement had not crossed the Saskatchewan, but settlers were scattered along the southern slope of the valley. They had grown wheat and oats in small quantities, and owned some few head of cattle. As far south as Big Gully creek which crosses the northeast corner of township 50, range 27, and the southwest corner of township 50, range 26, settlement is in an early stage. The settlers had apparently been in the country but a short time, houses and shelter for cattle were being built, pieces of land ploughed and small crops of grain harvested. Most of the settlers are English.

The country is hilly with scattered clumps of second growth poplar and willow brush. The small lakes and sloughs which are numerous are very often alkaline. The soil is a sandy loam with a clay subsoil.

Game consists principally of duck and prairie chicken. There are also some coyotes and muskrats. There was no indication of minerals.



## SESSIONAL PAPER No. 25b

Fuel can be obtained in small quantities from the scattered clumps of poplar. The larger poplar timber lies mostly along the banks of Saskatchewan river.

About November 1 the sloughs and small lakes began to freeze over and by the middle of the month the frost began to settle in the ground, so that by the end of the month the digging of pits became a slow and difficult part of the work. Consequently having received instructions to close the season's operations when these conditions came about, we stopped work on December 2, drove to Lloydminster and shipped the outfit to Edmonton where having made satisfactory arrangements with Mr. Angus McDonell, of Ray, Alberta, for wintering the outfit, I placed the same in his charge and left Edmonton for Ottawa, where I arrived on December 11.

I have the honour to be, sir,

Your obedient servant.

T. A. DAVIES, *D.L.S.*

## APPENDIX No. 21.

REPORT OF W. J. DEANS, *D.L.S.*

## SURVEYS IN SOUTHERN SASKATCHEWAN.

BRANDON, February 24, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit the following report on my surveys in Saskatchewan during the season of 1907.

On May 12, I received your instructions directing me to make a retracement and restoration survey of township 21, range 1 west of the second meridian, and township 24, range 30, west of the principal meridian.

I also received instructions on the same date to sell a horse which had been left at Oak Point. I tried to dispose of the horse by corresponding with some parties, with whom I had some acquaintance, but failed. It was, therefore, necessary for me to visit Oak Point. I found the horse in a very poor condition, but after a great deal of effort I succeeded in selling him at what seemed to be a good price.

On my return to Brandon I expected that a letter containing the usual advance would be awaiting me, as the instructions stated that such would be mailed in a few days. It was June 8, when the advance reached the Bank of Montreal.

On June 12, I left Brandon for Saskatoon to take over an outfit which had been left at this place by Mr. W. R. Reilly. I found the light horses, which had been wintered by Mr. J. McNeil, in splendid condition, although the winter had been most severe and hay exceptionally scarce. It was a source of great pleasure to me to meet a man who had carried out his agreement in such a satisfactory manner. A large portion of the outfit which was stored with Mr. J. F. Cairns, Saskatoon, was destroyed by fire. It was consequently necessary for me to replace the parts required before leaving Saskatoon. This unforeseen occurrence delayed me two days.

On June 17, I obtained a car from the Canadian Northern Railway company and shipped the outfit to Canora at which place it arrived on June 21. Owing to the severity of the winter and the great snowfall, the roadbed of this railway was in a bad con-



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dition in many places and derailments were quite frequent. I was much relieved when the car arrived containing the outfit and man without any serious mishap.

From Canora I went by road to Yorkton arriving there on June 22. My instructions were to organize the party at this place. I had not been in Yorkton since 1899, and my recollections associated it with a collection of shacks. I was surprised to find it a place of such size and importance and began to realize the possibilities of this western country. Two days were required to organize the party and get supplies so that it was not until June 25, that I got started for township 21, range 1, west of the second meridian, the scene of my first work.

The country between Yorkton and this township is well settled in places and contains many fine cultivated farms, and buildings equipped with all appliances for successfully carrying on farming operations. The houses contain conveniences which one would hardly expect to find in such a new country.

The original survey of township 21, was made in 1880 and many of the corners were marked with wooden posts and bearing trees which in most cases had disappeared and now that the township had become well settled it was necessary to retrace the lines and restore the monuments so that roads could be constructed and fences placed on the correct lines. Most of settlers signed the necessary petition enabling me to do this work and appeared pleased when it was completed.

The Polar Star Ranching company own a number of sections in this township and had quite a large force of men engaged in cleaning the land and placing it in a state fit for cultivation. The old settlers have waited long and patiently for a railroad and are elated over the prospects of their expectations being realized. The Canadian Pacific have surveyed a line which runs from Esterhazy to Bredenbury and passes through the centre of the township. It is thought that this line will be constructed at once. The Grand Trunk Pacific have also constructed their main line about two miles south of this township so that the settlers will have railway facilities which will enable them to market their produce to great advantage.

I completed the survey of township 21 on August 2, and next day started for Saltcoats. While in this vicinity I investigated a claim in reference to a lake located on the northeast quarter of section 11, township 24, range 2, west of the second meridian. I found that the lake was one the area of which should be deducted according to the provisions of the Manual of Survey and accordingly traversed it.

On August 6, I started for township 24, range 30, west of the principal meridian, arriving at the northwest corner the same day. We erected our tents and made preparations to start to work next day. This township was subdivided in 1882 and in 1902 a restoration survey was made, the surveyors reporting serious errors in the original survey. My instructions were to correct these errors if possible, and retrace all lines. I found it impossible to make any corrections owing to the numerous complications, but retraced all the lines and restored the monuments. The plan of this township furnished me showed a lake having an area of about 160 acres, located on sections 25 and 26. I was much surprised to find that no such lake existed, the site being mostly high and dry prairie. There are quite a number of Galicians settled in the northwest corner of this township, where the most serious mistakes occur, but I found that Galicians were much like other nationalities, the desire to have the errors of survey corrected extending only to the man with the small homestead. The work was seriously retarded in this township by the extraordinary wet weather which prevailed throughout August. The want of railway is greatly felt by the settlers in this part.

I intended to go south after finishing my work in township 24 to carry out your instructions contained in a letter dated July 4, but a telegram received on August 29, stated that surveys were required of Doukhobor villages near Buchanan and that I was to communicate at once with Michael White, Doukhobor interpreter. I telegraphed Mr. White that I would try to be at Buchanan on September 5, but owing to the wet weather and the impassable condition of the roads, I did not reach Buchanan until September 10, at which place I was further delayed two days so that it was



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September 12, before I arrived at the Doukhobor village of New Gorilloe, in township 32, range 6, west of the second meridian. My instructions in reference to the survey of the Doukhobor villages stated that I was to be guided by information contained in a letter of the secretary of the Department, dated August 15, and the suggestions of Michael White, Doukhobor interpreter. The villages were to contain twenty acres and where not on sectional road allowances were to be connected by roads from the village site. I first surveyed the village of New Gorilloe, giving it an area of twenty acres including a road. I also surveyed a road one chain wide, starting from the northeast corner of section 5 and running easterly in a straight line to the northeast corner of section 4. Over this road the Doukhobors and public living to the west will be enabled to reach Buchanan by a short and good route.

My next work was to survey the village of Kyrillovo, situated on section 7, township 32, range 6, west of the second meridian. This village has an area of 20 acres, including a road connection.

I next surveyed the village of Moirayovo, situated on the west half of section 21, township 31, range 6, west of the second meridian. The village has an area of 20 acres. This village being near the centre of the section, it was necessary to give them an outlet, and accordingly I surveyed a road a chain wide, starting at the quarter-section post in the east boundary of section 20 and running easterly to Spirit creek, where I made a diversion in order to get the best and most economical site for a bridge. Shortly after crossing the creek the road again assumes its original course and connects with a road which I surveyed through the Doukhobor village of Resbehileovo, thence on to the meridian road allowance east of section 23. This road will allow the Doukhobors living to the west, south and east an outlet to Buchanan which can be travelled at any season of the year, made possible by the construction of a bridge across Spirit creek. The settlers and people of Buchanan greatly appreciate this road.

My next work was to survey the village of Ootishennie, situated on the southwest quarter of section 31, township 30, range 5, west of the second meridian. This village has an area of twenty acres and is situated near Patterson lake. On September 28, I started to survey the village of Kalmakova, situated on the southeast quarter of section 31, township 30, range 5, west of the second meridian. I surveyed a road southerly from this village to the sectional road to the south. The area of this village, including a road running through the centre, is twenty acres. I next surveyed the village of Old Gorilloe, situated on the northeast quarter of section 17, township 30, range 5, west of the second meridian. The area of this village, including roads, is twenty acres. The inhabitants of this place are all independent Doukhobors and are divided into two bitter factions so that Mr. Michael White and myself found it impossible to reconcile the discordant elements. We accordingly laid out the village and roads in a way by which we considered all parties would be equally benefitted. There is a public school in this village. We surveyed two acres as a site for the school. The Doukhobors do not take advantage of the facilities offered to obtain an education, there being only one Doukhobor present on the two occasions when I visited the school.

On October 9, in company with Mr. Michael White, I left Buchanan for the Doukhobor village of Novoe. It was reported by the Doukhobors that the houses in this village were on the road allowance and on this account they wished a road diversion. I ran the east boundary of section 14 and found that the houses were not on the meridian road allowance, and that to divert the road as the Doukhobors wished would close up the only ford on Whitesand river for a considerable distance and would doubtless inconvenience the public who might have occasion to use this road. We therefore refused to make any diversion.

On Saturday, October 12, I arrived at the Doukhobor village of Pakrofka, situated on the northeast quarter of section 28, township 30, range 1, west of the second meridian. I surveyed this village, giving it an area of twenty acres, including two connecting roads. One of these roads is a chain wide and is taken off the southerly



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part of the northeast quarter of section 28, township 30, range 1, west of the second meridian, and runs the whole width of the quarter section and in an easterly direction, connecting the village with the road allowance to the east; the other road is fifty links wide and runs from the road allowance north of section 28 southerly through the village.

While surveying the Doukhobor villages I noticed the supreme authority Peter Veregin had over the community and the use he made of his power. I know little about the religion or creed of the Doukhobors, but it appears to me that they do not observe very strictly that code of morality common to all Christian sects.

My work was greatly retarded by rain in September. I found Mr. White thoroughly conversant in all matters pertaining to the Doukhobors and deeply interested in all that concerned them. It was a great pleasure for me to be assisted by him in this work.

On October 16, I left Pakrofska for Frame lake, having received instructions in September to traverse that portion of the lake which extended into township 34, range 3, west of the second meridian. I arrived at the lake on October 19, and completed the traverse the same day. From Frame lake I started for Invermay by way of Buchanan to investigate the necessity of traversing two lakes situated in township 32, range 8, township 32, range 9, and township 33, range 9, west of the second meridian. I retraced some of the lines in townships 32 and 33, range 9, placing traverse points on the lake shore. I extended the east boundaries of sections 28 and 33 to Saline lake. I decided it would be better to wait until these lakes were frozen before attempting to traverse them, as there was a thick growth of poplar and a peculiar stone wall around the lake in many places.

On October 28, I started for Kamsack to retrace the boundaries of a parcel of land situated in the northeast corner of Côté Indian reserve No. 64, and to make a traverse of Whitesand river from the second meridian to its junction with the Assiniboine river, also to retrace the west boundary of Côté Indian reserve No. 64, and subdivide any unsubdivided land east of the reserve. I arrived at township 30, range 31, west of the principal meridian on November 2, and started to retrace the boundaries of a parcel of land referred to in your instructions as being in the northeast corner of the Côté Indian reserve, No. 64. I found that the subdivision within the reserve did not agree with the work which had been done previously to the east, there being a jog of nearly 10 chain in the roads running east and west. I traversed the easterly boundary of the reserve and found that there was a deflection to the west but not as much as that which appears on the township plan. I found a small piece of land east of the reserve which had not been subdivided. I extended the lines through this to the reserve. In township 29, range 31, west of the principal meridian I retraced the east boundaries of sections 33 and 28 and the north boundaries of sections 21 and 28 re-establishing the corners. I also retraced the south boundary of Côté Indian reserve, No. 64, and connected this with the subdivision to the south.

On November 16, I started to retrace the lines in township 30, range 32, which crossed Whitesand river, placing traverse points in the centre of the river. I completed the traverse of the Whitesand on November 29. On December 2, I with the party, took the train at Kamsack for Invermay to traverse Saline and Stonewall lakes. I completed the survey of these lakes on December 7, and on the 9th returned to Kamsack where I found your instructions in reference to retracing the south boundary of Côté Indian reserve, No. 64, and connecting it with the subdivision to the south. I completed this last work on December 11, and on the 12th I paid off the party, stored the outfit and made arrangements to winter the horses. I arrived back in Brandon on December 14. Not having any assistant I thought it better for me to do the larger pieces of work as I found moving a large party slow and cumbersome, taking up too much of my time.

The weather in June, July, August and part of September was very wet making travel slow and unpleasant, also seriously interfering with the work.



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The wheat crop throughout the part of Saskatchewan in which I was working turned out poor, but oats and barley did very well. I noticed a great deal of new breaking throughout the part in which I was engaged, the crop conditions not affecting adversely the spirits of the settlers.

I have the honour to be, sir,  
Your obedient servant,

W. J. DEANS, D.L.S.

## APPENDIX No. 22.

## REPORT OF L. E. FONTAINE, D.L.S.

## TRAVERSE OF MILK RIVER IN SOUTHERN ALBERTA.

LEVIS, QUE., March 23, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit the following report of my field operations, during last season, on the course of Milk river, in southern Alberta, performed in accordance with your instructions dated April 10, and those of subsequent date relating to subdivision of part of township 4 range 6 west of the fourth meridian.

On receipt of your instructions, I proceeded to Ottawa, where I remained two days, in order to procure additional information for the carrying out of the survey operations during the summer, I then left for Edmonton, Alberta, where I arrived on April 29.

My object in going to that point was to forward south the outfit stored there during the previous winter, and to secure the services of my men of last year who would be willing to hire for a second season, and also, if possible, engage the full complement of labourers required, as I was well aware from past experience that I would not be able to engage the required number in the district where I was to operate. I was fully successful in this, and on May 3, I left for Calgary.

On May 6, the men arrived from Edmonton and on the 8th, they left for Lethbridge by way of the Calgary and Macleod trail, and on the 14th arrived at their destination. I had preceded them by train, and occupied the few days at my disposal completing the organization. On their arrival, everything being in readiness, we proceeded on our journey to the international boundary by way of Cardston and Taylorville, and on May 27, camped on the southeast quarter of section 3, township 1, range 23, west of the fourth meridian.

For a few days following my arrival at the starting point, on account of the high winds and prevailing rains, I was obliged to postpone operations; eventually, conditions becoming favourable, the work was proceeded with and carried out successfully and uninterruptedly.

In order to act in accordance with your instructions and carry out effectively the two distinct survey operations called for therein, I proceeded to traverse the river, using the stadia method during two successive days, and on the third day, while a squad of men would be moving camp, I gave my attention to the line of levels.

This mode of procedure, in my estimation, was the only way that these two operations could be carried out simultaneously, without any loss of time, and the result achieved is an evident proof in this respect.



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The course of the river meandering across ranges 5 to 23, was considered too great a distance in longitude to refer all bearings to the same meridian; therefore, the following division was made:—

1. From station 1 to station 322 all bearings are referred to the central meridian of range 23.

2. From station 322 to station 688, all bearings are referred to the central meridian of range 17.

3. From station 688 to station 919, all bearings are referred to the central meridian of range 11.

4. From station 919 to station 1101, all bearings are referred to the central meridian of range 7.

With reference to the line of levels, it may be noted that from the starting point, following the north branch of the river and proceeding easterly to the forks, a difference of six hundred and twenty feet in elevation was observed over a distance of sixty miles, or an average fall of a fraction over ten feet to the mile.


On the south branch from the forks in a southwesterly direction to the international boundary a difference of two hundred and ninety-six feet in a distance of twenty-five miles was observed, or an average fall of nearly twelve feet to the mile.

From the forks easterly to the international boundary in range 5, a fall of eight hundred and fifty-four feet in a distance of one hundred and fifty-five miles was noted, or a drop of five and a half feet to the mile.

The line of levels was carried on throughout the entire traverse, and at every half mile, when practicable, the elevation of the river bank above the water line was noted.

The elevation used at the starting point is that given for bench mark No. 53, mentioned in the report, 'Irrigation in the Northwest Territories of Canada, 1902,' by J. S. Dennis, Deputy Commissioner of Public Works.

Connection was also made with permanent bench marks Nos. 288 and 290, of the above-mentioned survey.

As requested, section iron posts marked T. H. (traverse hub) on one side, and B. M. (bench mark), with a crow's foot () on the other, were placed on all township outlines intersected by the survey, and the elevation of each will be found in the note books.

A permanent bench mark with a stone cairn was established on the north bank of the river in range 5, opposite the mouth of Kennedy creek. This was considered a more favourable place for establishing it than at the end of the traverse, as first intended. Owing to its proximity to a well known ford of the river and the location of Kennedy creek being known throughout this section, this bench mark can be easily identified.

The course of Milk river is in a well defined valley, bordered on each side by a range of hills, in which its sinuous course forms intermittent flats of more or less extent.

From the international boundary, in range 23, easterly to the east half of range 15, the elevation of the banks above the mean water level is not of a very great height, and during heavy prevailing rains the flats in the section are in many places flooded, and the effects of erosion are everywhere evident. In the east half of range 15 and the west half of 14 the river runs through a series of canyons and small gorges.

From here to range 6 the stream meanders in a valley twice the size of that at the head waters. In range 6 and the greater portion of 5, the river flows through what is commonly known as the 'bad lands.' This, I may say, is not a very inviting spot, as it is an agglomeration of broken hills of various heights which bars access to the stream. In the remaining part of range 5 it resumes its normal course.

The south branch presents very nearly the same general topographical features, except that it carries a greater volume of water and has a swifter current.



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Except in ranges 5 to 8, where a few poplar, cottonwood and willow are to be found on some of the benches, the remainder of this valley is absolutely void of timber. On the other hand, any quantity of building stone can be obtained throughout almost its entire course.

\* \* \* \* \*

On the completion of the operations on Milk river, I attended, as requested, to the subdivision of part of township 4, range 6, west of the fourth meridian, and when this was carried out, I left for Calgary, where I discharged the party.

I have the honour to be, sir,  
Your obedient servant,

LOUIS E. FONTAINE. *D.L.S.*

## APPENDIX No. 23.

REPORT OF W. T. GREEN, *D.L.S.*

## MISCELLANEOUS SURVEYS IN SOUTHERN ALBERTA.

OTTAWA, March 1, 1908

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit the following general report on my survey operations in southern Alberta during the season of 1907.

In accordance with your instructions of April 22, I left Ottawa for Calgary on April 29, and arrived there on May 3. All through the west the season was very late, and the settlers were anxiously awaiting the advent of warmer weather. Little or no seeding had been done up to this time and grave fears were being entertained as to the safety of the crop for 1907. I organized my party in Calgary, where I found that men were fairly plentiful. With the exception of cook, the positions on the party were easily filled. It was difficult to secure a good cook for the wages paid by the Department.

On May 9 I left with the party by train for Claresholm, a flourishing town on the Calgary and Edmonton extension of the Canadian Pacific railway. Like so many towns in the west, the growth of this place has been phenomenal. Four or five years ago there was nothing but the station house, a mere dot on the prairie, while to-day it is a thriving centre of industry with a population approaching the thousand mark. The country to the north and east which has so long been the undisputed territory of the ranchers is now being converted into farms. All around could be seen the smoke of the steam ploughs turning over the virgin soil. I understand that hundreds of these outfits have been brought into southern Alberta within the last year and as, under favourable circumstances, they can turn over twenty or thirty acres per day, one can readily see what a factor they are becoming in the development of the country. Fall wheat can be grown quite successfully in southern Alberta, and will, in a few years, I think, be an important asset to this portion of our great West.

On May 10 I hired a livery and with three of my party drove to Lyndon to the home of Mr. Erwin, with whom Mr. Hawkins stored his outfit when he closed operations the fall before. This drive proved to be particularly interesting and instructive.



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leading as it did through the Canyon ranch and the 'Forty-four.' The latter with an area of about 17,000 acres is one of the largest ranches in this neighbourhood. On all sides were to be seen the ghastly relics of the most severe winter Alberta has experienced for over twenty years. Dotting the hillsides, in the ravines, lying in the creeks, and sometimes on the trail were seen the carcasses of last winter's victims.

I found the transport outfit in very fair condition, with the exception of the buckboard which would have lasted scarcely a month on our work. Accordingly I sold it to Mr. Erwin and purchased instead a 'democrat' from the agent of Gray's Carriage works, in Claresholm. I spent two days in Claresholm, having the horses shod, wagons and harness repaired and purchasing supplies.

On May 15 we moved to the northeast quarter of section 35, township 13, range 24, west of the fourth meridian. The country between Claresholm and Little Bow river is rapidly becoming settled and but little land available for settlement is vacant. Generally speaking the trails are good. The Blackfoot trail has been fenced up across many of the sections, but the road allowances are rapidly being graded into shape and before long will be as good as any in the west. The surface of this district is open and undulating, becoming more decidedly rolling as one approaches the Little Bow. Close to the river the soil is of a light sandy nature, becoming heavier farther back. Mr. A. C. Nash, for whom the survey was performed, has a comfortable home on the edge of the river. He is engaged entirely in ranching. High cut banks are to be found along the Little Bow with outcropping of rock in several places. No evidence of coal was found though there is a good coal mine within reasonable distance where the settlers obtain their fuel.

I completed the work in this township on May 21, and on the 22nd moved to Claresholm again. The afternoon was spent replenishing supplies and on the morning of the 23rd we left for our next work in township 13, range 1, west of the fifth meridian. There is a surveyed trail from Claresholm to Lyndon postoffice, a distance of about twenty-two miles. This road is good in dry weather, but in a rainy season becomes very heavy. There is a much shorter route across the Canyon ranch, but several steep hills make the road impracticable, except for a saddle horse or a light load. From Lyndon to Lyndon mill, a distance of seven or eight miles, the Lyndon Lumber company have graded a road for the convenience of settlers drawing lumber from their mill in section 11, township 13, range 30, west of the fourth meridian. This road like the one from Claresholm to Lyndon is very heavy in rainy weather, although excellent in a dry season. We reached Lyndon mill at noon on May 25, and as we could get no farther with wagons, we camped on Lyndon creek near the mill.

Lyndon mill has a capacity of 12,000 feet per day and supplies the settlers for miles around. They have been operating now for over two years and have enough timber in sight for two or three years without being compelled to move their mill. Lyndon creek is about eight or ten feet wide and two to three feet deep. Its water was unquestionably the choicest I found all season, clear as crystal and cold as ice.

The district is eminently a ranching country, though the settlers between the mill and Claresholm make some attempts at cultivation. Early frosts coupled with the hilly and broken nature of the country make agriculture to any great extent impossible.

On June 5, having completed the work in township 13, range 1, we started for township 14, range 1, and although our next camping place was distant only about eight miles in a straight line from Lyndon mill, we did not reach our destination until noon of June 6. In that time we travelled nearly twenty miles, making long detours around the higher hills and frequently doubling for miles over the smaller. We camped in section 30, township 14, range 1, on Willow creek, and from there with one or two flying camps I was able to complete the work in this vicinity.

This township can scarcely be equalled as a grazing and ranching country. A luxuriant growth of grass, a plentiful and permanent supply of water in Willow creek



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and its numerous tributaries and plenty of open land for cutting hay, all help to make an ideal stockman's home. Much of the land in the northern and eastern portions would be suitable for grain growing if it were not for the danger of early frosts. In this connection a peculiar phenomenon was noted. Willows postoffice, situated in section 12, seems to be the line of demarcation for the ravages of the summer frosts. Below there, along Willow creek, vegetables and grain will mature well; above that point a crop is never sure. Several ranchers have quite large holdings—the McIntoshes, McDiarmid's and Riley and Thompson's being the largest stockholders. There is a fair road from Willows to Nanton, a thriving town on the Calgary and Edmonton extension of the Canadian Pacific railway. This trail crosses over a high hill in the northeast of township 14, range 1, and I believe the provincial government intend surveying a new road to circumvent this hill.

On July 26, we left for the forks of Highwood river in the southwest of township 18, range 1. With the exception of about four miles through Cochrane's ranch we found an excellent trail from the 'C.-C.' ranch in township 14, range 2, to the forks. On the way we passed through a portion of the 'Bar U' ranch, one of the largest in the whole of the west. Travelling north the country changed from the roughly rolling and hilly character of the Willow creek district to the gently rolling and open farming country along the Highwood. Some excellent crops were noticed. The country along the river is very picturesque, on the one side high almost cut banks with a growth of poplar and willow, on the other a gently undulating flat with just a fringe of trees along the edge. A bridge is badly needed here, as the river is a dangerous ford at low water and in high water is particularly dangerous. One of the settlers informed us on our arrival that there was an excellent ford, and trusting to his superior knowledge of the country, we attempted to cross with our loaded wagons. Suffice to say that we were thankful to get our horses and dunnage back safely, and were content to remain on the high side of the river.

After two days survey here, we left for our next work in township 20, range 4, west of the fifth meridian on July 30, going by way of High river and Okotoks, two prosperous towns on the railway. On August 3, we reached section 21, township 20, range 4, finding an excellent trail the entire distance of sixty-five miles. Like Willow creek district, this is a ranching country though there is less open country. Some excellent hay flats are to be found along Ware creek or as it is locally known Sinnott creek. I believe there is good timber in the west of this township, and it is expected that a mill will be operated there in the near future.

After completing the work here, we left for Calgary en route for Banff to perform certain surveys there pursuant to your instructions of July 25. We reached Calgary on August 15, and having secured a car, we loaded our outfit the same night. Owing to the irregularity of the train schedules at this time, we did not reach Banff until the morning of the 17th and we were forced to unload and move out to camp in a regular downpour of rain. This turned to snow during the night, and on the morning of the 20th, I received my first impressions of the mountains. So much has been written of the gorgeous splendour of the scenery here that anything I could say would seem of little value. But the grandeur of the view that met my gaze that morning will not soon be forgotten. Mt. Rundle, Sulphur mountain, Cascade mountain, Mt. Edith, the Vermilion and Sawback ranges and Tunnel mountain glistening in the sun with their new garments of snow, and rearing their lofty peaks until lost to view in the clouds above, made a memorable picture indeed.

The popularity of Banff as a summer resort is so widespread that the numerous hotels, both tourist and commercial, are taxed to their fullest capacity during the summer season. It is the centre from which so many expeditions, of a nature interesting to the mountain climbing enthusiast, can be made and is an ideal spot for such to enjoy their summer vacations. Cascade mountain and Mts. Edith and Rundle challenge



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the more daring of the climbers, while Sulphur and Tunnel mountains provide an interesting climb for the less adventurous.

Too much credit cannot be given to the superintendent and officials of the Rocky Mountains park for their excellent work in making possible many of these expeditions.

Pack trails have been cut and blazed, roads which have not their equal in Canada have been graded along the valley of the Bow and everything possible is done to make the transient guest remember his stay in Banff as one of the bright spots in his travels. And yet much more could be done to enhance the natural beauty of the place. With the power right at hand, in the Bow River falls, the part of the valley known as 'The Loop' could be transformed into a veritable fairy land. As the editor of one of the western weeklies remarked, 'it could be made to rival the world-famed Coney Island.' At present there is little or no entertainment provided during the summer evenings for the hundreds of guests and tourists and this lack must be very noticeable to the large percentage of Americans among them.

The game regulations are rigidly enforced and the result is becoming noticeable. The park is a city of refuge for all kinds of game and this fact is doing much to preserve many of the animals peculiar to our Rocky mountains. A great many sheep and goats were seen on the Sawback range and they seemed but little afraid of man.

On September 2, having performed as much of the traverse of Bow river as was convenient from our camp in 'The Loop,' I moved to the 'Brewster Leasehold,' the resurvey of which occupied three weeks.

In the second week of September we had a heavy fall of snow lasting for three days and delaying the work considerably. One of my greatest difficulties while working in the vicinity of Banff was the procuring of hay for the horses. Even at twenty dollars per ton, only hay of the poorest variety imaginable could be secured, one bale at a time. Those who had any for sale were very independent and it needed a deal of persuasion and pleading to get them to part with any. Oats at two dollars per sack were somewhat prohibitive. All the hay is brought by train from Calgary though the park authorities manage to cure a little each year for the use of the buffalo through the winter. It is no uncommon sight to see men wading up to their knees around Vermilion lake, carrying out grass forkful after forkful to some high spot where it could dry.

The present holder of the Brewster lease has a large herd of dairy cows during the tourist season. Through the summer months he has upwards of fifty milch cows with which he supplies the larger hotels. In the fall he ships all but twelve or fifteen to some ranch farther east, wintering them there until the opening of the next season. With those he keeps he can provide for the winter population of Banff.

The survey of the Brewster leasehold proved particularly difficult and arduous. With the exception of the portions of the northwest limit of the old park, the work could have been accomplished much more easily and expeditiously in winter. Forty-mile creek, a rushing mountain stream, had to be forded again and again in the traverse of that portion of the boundary of the lease. One of the party more daring than the rest would manage to make the first crossing and then by means of a rope the rest could be steadied across to safety. It was with many misgivings, I watched the transitman make the trips across with the instrument on his back. One misstep and both might have been washed away. We would probably have managed to save the former but the loss of the latter would have tied up the survey for days.

However the work was completed and the entire boundary resurveyed with no very serious mishaps. The length and bearing of the easterly half of the northwest limit were obtained by traverse saving us at least some of what appeared to be almost impossible chaining.

On September 26, we moved camp to section 4, township 26, range 11, following the carriage road which the park authorities have put in such splendid shape. On our way we passed through the deserted village of Anthracite. Churches, hotels, stores and dwelling houses all bear testimony of the sometime presence of man. Good



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coal was obtained here but after the mine was worked out the miners drifted away some to the new Pacific Coal company's holdings at Bankhead and others farther west. There is another mine at Anthracite which will probably be operated in the near future and the town will again become an inhabited centre.

From this camp we traversed Cascade river through township 25, range 11, and the left bank of Bow river as far as the east boundary of section 28. The want of a boat handicapped us very much in the traverse of Bow river. If it had not been for the railway bridges across the river I would have been compelled to purchase a punt or canoe. As it was we had many a long weary walk on account of being unable to cross the river.

On October 2, we moved camp to section 27, township 25, range 11, and from there completed our work in this vicinity. The traverse of both banks of Bow river through this township necessitated more or less cutting throughout the entire distance. The right bank, especially in the western part of the township, was heavily wooded with large spruce and jackpine down to the water's edge.

We completed the work on October 9, and on my return to camp that day I received your telegram instructing me to proceed at once to subdivide a portion of township 27, range 17, west of the fourth meridian. On the morning of the 10th we left by trail for Calgary. Considering the nature of the country through which it passes the road from Banff to Calgary is in splendid condition. If the portion between Canmore and Exshaw were properly fixed, it would equal any carriage road in Canada. From Calgary to the boundary of the Rocky Mountains park the provincial government graded and are still grading their share of the road, and the park authorities are to be credited for the excellent work they have done on their portion from there to Banff. In a few years this should make a very popular driveway whether for horse or motor carriage.

On the evening of the 10th we reached Exshaw, where we remained until the next day to have the horses shod. Exshaw is a new town and its chief industry, the cement works, was not yet in running shape. The immense factory with its gigantic frame of steel, gave promise, however, of a thriving business. It was estimated that employment would be given to fully three hundred and fifty men in the night and day shifts. The town is owned by the cement company, and it was refreshing to see a place where real estate offices did not crowd out everything else.

On the night of the 11th we reached Morley, the Indian agency. Here I tried to secure the services of two Indians for the remainder of the season, but the wages did not seem sufficiently good to tempt the better class.

From Morley we made the remainder of the distance to Calgary in a day and a half, reaching there at noon on Sunday. The entire journey was made in three days of actual travelling, a fact which speaks well for the character of the road. No more enjoyable drive could be taken in the west than that from Calgary to Banff.

I was detained in Calgary from October 13, to 22, awaiting instructions from the Department which, unfortunately, had gone astray in the mails. The most regrettable feature, however, was the loss of the splendid weather at this time.

On the morning of October 23, we left for township 22, range 4, west of the fifth meridian. On our way we passed through the Sarcee Indian reserve, about half of which is composed of some of the finest land around Calgary.

The surveyed trail from Calgary to Priddis is in splendid condition. West of there, the road is only fair and in several places in a wet season would be very bad. In one bog we broke the reach of one of our wagons, delaying us several hours. On the 24th we reached camp in section 35, township 22, range 4.

This township is more wooded than the Willow creek country, but is still well suited for ranching. Most of the valleys are open and while much of the land, upon which hay could be cut, is somewhat swampy, there is plenty sufficiently high and dry to provide winter fodder.



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As yet there are only four settlers in the township and their holdings are comparatively small. An attempt has been made at agriculture, although not to any great extent. Last year the crops were entirely ruined by the early snow and frosts, and the oats could only be used as green feed. In time, however, I believe that farming will be carried on all through this district as the land becomes cleared and drained. There is quite a large amount of fair timber in the southern and western portions of the township, and plenty of standing fire-killed jackpine and poplar for fuel.

On November 4, we moved to section 18. The trail across the township is impassable in a wet season and even when we used it, was very soft in several places. The road ends at the northeast corner of section 18, and we made an attempt to open out a road into the next township west. We succeeded in reaching the southeast corner of section 18, but found that beyond that point wagons were useless. Fallen timber combined with the mountainous nature of the country to the west made pack horses the only practicable means of transport. Although we made an effort to do the work in township 22, range 5, I decided, after three days of heart-breaking walks, that this part of the work would have to be abandoned. As the season was so far advanced and as there were no settlers in the township, I did not think it advisable to incur the extra expense of purchasing a pack outfit.

Accordingly on November 11, we moved back to section 17 to complete the work in township 22, range 4. This was accomplished on the 13th, and on the 14th we moved to section 25 of the same township. The return trip across this trail was, if anything, worse than the first. The ice on Fish creek was from one-half to one inch thick, and wherever the trail led across we had to cut a way through. Mr. Cummings, who is homesteading the northwest quarter of section 24, having purchased the southwest quarter of section 25 from the Canadian Pacific railway, asked us to locate his corners for him before leaving the district. Accordingly we spent the 15th running the west half of the north boundary of section 24 and the east boundary of section 26, township 22, range 4. The lines were completely grown up, not a trace of cutting being visible. Evidently when the original survey had been made, there was either open country or small scrub, while now there is poplar up to six or eight inches in diameter. I found the mounds easily enough after cutting out the lines, much to the surprise of Mr. Cummings, who declared that no monuments had ever been erected. I renewed the mounds at the quarter section on the north boundary of 24, also the pits at the northeast of section 26.

On November 16, we left for section 35, township 22, range 2, where I had made arrangements for wintering the horses and storing the outfit. We reached there that evening. On the 18th I sent in to Calgary, a distance of some twelve miles for any mail or telegrams which might have arrived in regard to further work. I received none though I presume that your wire in reference to the traverse of Willow creek must have arrived just after my men had called. I might say, *en passant*, that this telegram reached me in February of 1908.

I decided not to delay the discharge of my party any longer and on the 19th I packed the outfit away and made out the articles of agreement with Mr. Stobo. As the horses and transport outfit were all in good condition for another year I presumed that it was not your intention to sell any part of them. Your letter of instructions which arrived later was in accord with what I had done.

On November 20, I discharged my party although I had to remain a day or two in Calgary making arrangements with the bank for the payment of the cheques. I found the Bank of Montreal very courteous and I had no difficulty in getting the party paid.

On November 22, I left Calgary arriving in Ottawa on the 29th.

I have the honour to be, sir,

Your obedient servant,

W. T. GREEN, D.L.S.



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## APPENDIX No. 24.

## REPORT OF ERNEST W. HUBBELL, D.L.S.

RESURVEYS AND INSPECTION OF CONTRACTS IN THE PROVINCE OF SASKATCHEWAN.

OTTAWA, ONT., March 7, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit the following general report of my survey operations in the province of Saskatchewan, during the past season.

In compliance with your letter of instructions dated April 10, 1907, I left for Winnipeg on April 23, arrived there on the 25th and remained over one day in order to inspect five thousand iron section posts, at the Manitoba Iron Works. Accompanied by Mr. Miles, D.L.S., I visited the said works and tested several iron bars, picked at random by driving them into partly frozen ground, the regulation depth. None were broken or defective. I then telegraphed you that the inspection was satisfactory. The next day I left for Moosejaw, my organizing station, and arrived there on the 28th, where I found my camp pitched and several of my men awaiting me, as previously arranged.

The following week we were engaged in overhauling and repairing the survey outfit, bringing in horses from their winter quarters, purchasing supplies, training chainmen and attending to the numerous essentials for the equipment of a survey party.

On May 4, we were ready to start, but owing to inclement weather, and as there was no grass for the horses, we decided to wait for a few days. On the 6th one of my horses was injured and although a veterinary surgeon was called at once and an operation performed, it was of no avail; the poor animal died in great agony. On the 7th we shipped 1,600 pounds of supplies by rail to Caron, distant eighteen miles, and the following morning left Moosejaw, making but ten miles as the trails were soft and muddy, besides a heavy snowstorm about two o'clock compelled us to pitch camp.

The next day we reached the initial point of our survey, section 6, township 17, range 29, west of the second meridian, and pitched camp, during a severe snowstorm. The whole country was covered with snow ten feet deep in the ravines and the weather like what we would expect in November.

We commenced our season's work by running the east boundary of section 6, township 17, range 29, and proceeded northward along the meridian between ranges 29 and 30, renewing obliterated corners and re-establishing lost ones. There being no township monument at the northeast corner of section 36, township 17, range 30, the fact was reported to you, this monument was destroyed in the construction of the Canadian Pacific railway grade (now abandoned) and is not the only instance to my knowledge, where survey monuments have been destroyed in construction of railway grades.

It appears to me that some provision should be made by the engineer in charge of construction to perpetuate a mark showing the position of these monuments and not heedlessly ride roughshod over government land marks, which are essential to the settlers and others for establishing the boundaries of their homesteads or claims.



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In the triangulation of Pelican lake, township 18, range 30, we found an error of 10 chains, this accounts for the excess in the quarter section adjoining the correction line.

After considerable trouble with some of the settlers, owners of these sections, I was able to procure in writing their consent to the rectification of the erroneous monuments, thus adjusting a longstanding dispute and giving to each settler his theoretical area. The excessive width of  $1\frac{1}{2}$  chains existing on the correction line between townships 18 and 19, range 29, I am afraid, cannot be adjusted without many complications and much expense, as the settlers all have accepted the original monuments and built their houses and fences accordingly, nor do I anticipate further complaints, all now appearing satisfied with the existing state of affairs. I therefore, recommend that the department take no further action in this matter.

We now proceeded to survey a meridian through townships 19, 20, 21 and 22, in range 29, which had been omitted in the original survey of these townships some twenty years ago.

The survey of this line did not meet with the approval of all the settlers concerned, many being under the impression that the strip of land eight chains wide, was part of the sections they had bought or homesteaded. On May 24, we arrived at Craik. The weather up to this time had been cold and raw with considerable frost in the ground. The country passed over is all prairie, fairly level, soil generally sandy loam, and worth from eight to fifteen dollars per acre. A fair portion is under cultivation and many new arrivals were employed building houses, fences and tilling the soil. Firewood and coal is procured at Caron and Mortlach, two small but thriving towns on the main line of the Canadian Pacific railway. The price of lumber varies from twenty-five to thirty-five dollars per thousand.

The Canadian Pacific railway is extending a branch line from Moosejaw to The Elbow on the south branch of the Saskatchewan river, graders were hard at work on this extension and a townsite was being surveyed in township 20. This railway will be of great advantage to the settlers in this district, who find it a rather long distance to the towns previously mentioned. I understand that this line is now in operation.

We next proceeded to township 25, range 25, and traversed an arm of Last Mountain lake, which passes through sections 25 and 36 and had been omitted in the original survey. My next work consisted of the retracement of section lines and eight miles of traverse of the west shore of Last Mountain lake in township 27, range 24, which was finished on May 31.

The weather continued cold and raw and the ice on this large body of water remained unbroken, something unprecedented. However, the frost was out of the ground and most of the settlers in this vicinity had completed their ploughing and seeding.

I now proceeded to township 35, range 1, west of the third meridian, to make a resurvey of the township, which, upon examination, was found to have been carelessly surveyed. There were no iron posts, and the few wooden ones found were almost rotted away. The positions of the survey monuments, more especially the quarter section corners, were most irregular; however, the greatest error was on the east boundaries of sections 3, 10, 15 and 22. The remainder, after considerable trouble were rectified, apparently to the satisfaction of most of the settlers. My experience in resurveys taught me that it is impossible to satisfy all the occupants or owners of land, someone is bound to raise an objection on principle, notwithstanding the fact that in some cases they gain considerable acreage and have their boundaries made straight. The Canadian Pacific railway has a line across this township, and the townsite of Elstar is surveyed and comprises portions of sections 3 and 10. I traversed a lake of about eighty acres in section 23, which had been omitted in the original survey. A detailed report of the resurvey of this township was sent you on June 17. The country in this vicinity and for miles around is prairie, surface level to rolling, soil generally



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sandy loam, suitable for the production of wheat, oats, barley, flax and vegetables, in fact some of the finest crops in Saskatchewan are raised here, and land is worth from twenty or thirty dollars per acre. Plenty of good water of a permanent nature is obtained from the many large lakes. A limited amount of firewood is procured from around Manitou lake, distant twenty miles, a supply which before very long will be closed to the settlers, as this timbered land is very rapidly homesteaded. It would be of inestimable value to the settler could a tract be reserved as a fuel supply. Grain and other farm produce is taken to Saskatoon, twenty to thirty-six miles distant.

Our next work was in the vicinity of Prince Albert (St. Louis settlement), distant by trail one hundred and thirty miles, where we arrived on July 3. During this trip we passed over a beautiful stretch of agricultural country, in fact the most productive of that great wheat-growing province of Saskatchewan.

It is superfluous to dwell on the resources of this well known portion of our great West, suffice it to say, that there are few, if any, vacant homesteads. Land varies from eight to twenty-five dollars per acre. The wooded country commences about township 42, extending northwards. On July 4, we commenced the resurvey of township 46, range 25, west of the second meridian and finished the same on the 12th. This fractional township comprised of river lots is all settled with considerable land under cultivation.

The surface is fairly level and mostly covered with small poplar and willow, the soil generally being sandy loam. Very few of the original posts were found and great confusion existed among the settlers as to the boundaries of their claims. A surveyed trail runs through this township which was tied to our work when practicable. A lake of about seventy acres not shown on the original plan, in lots 14, 13, 12 and 11 was traversed upon request of several of the settlers. Whilst at work in this township and vicinity, we were troubled very much with flies, commonly known as 'bulldogs.' They are most vicious in their attacks upon animals, but fortunately disperse when the sun goes down and are not 'in evidence' during wet or damp weather.

My next work was the resurvey of township 44, range 22, where we arrived on July 17. A great portion of the township is muskeg or swamp, and with the exception of a few open spaces, all covered with timber, principally poplar and willow, the former averaging six inches in diameter. There are few settlers in this township, it being too wet for cultivation. Not many of the original wooden posts were found, and these were far from their correct positions.

A surveyed trail across this township was connected with the new monuments of survey. Owing to the immense areas of impassable muskegs and swamps, it was impossible to survey all the section lines, although several attempts were made, the remainder if necessary will have to be done late in the fall or winter when everything is frozen over.

Whilst engaged in the survey of this township the mosquitoes were almost unbearable. Only once before have I experienced such a siege. Most of the time the weather was dull, cloudy and very hot, this combined with the wet surface of the country produced an unequalled climate for the propagation of mosquitoes. It was only by perpetual smudges that temporary relief was obtained for man and beast. For the information of the uninitiated and especially those who picture camp life as all sunshine, a few days spent in our camp at this particular time would effectively disabuse their minds as to the many pleasures one has on a survey.

According to your instructions of July 13, we returned to Saskatoon in order to effect, if possible, adjustments of certain disputes, between several settlers in townships 32 and 34 ranges 1 and 2, west of the third meridian and recently resurveyed. After ten days continuous travel we reached our objective point and proceeded at once to investigate the various claims or grievances of the disaffected settlers, in which we were partially successful. A detailed report of proceedings on this occasion was forwarded you August 14.



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My next work was the resurvey of township 49, range 26, where we arrived on August 23, after six days of continuous travel, during which we averaged twenty-four miles a day. The country passed over has already been reported on and I can only add that at this season of the year, the crops were at their best and looking remarkably well, but owing to the exceptionally late spring, all crops were two or three weeks later than usual.

Township 49, range 26, is heavily timbered, principally with jackpine, spruce and some clumps of poplar, from which all the mercantile timber has been taken. About ninety per cent of the soil is sand totally unfit for cultivation. Except a few half-breeds, who have shacks along the river, there is but one settler, the owner of a tannery and manager of the ferry at the crossing. The traffic across the river at this point is something wonderful, no matter the hour of the day, teams are always on the ferry, the rate charged is five cents per team.

Considerable sand and firewood is hauled from this township to Prince Albert. Little Red river meanders through this township and averages about one chain in width and from four to eight feet in depth, has a current varying from four to six miles per hour and is spanned by a fine iron bridge in section 14. Great quantities of sawlogs are brought down this stream by the Prince Albert Lumber company.

A timber reserve comprising nine sections in the southwest corner of the township, I understand, is to be abandoned and thrown open for settlement. Owing to want of time all the section lines were not retraced.

On September 7, we moved camp to section 23, township 50, range 25, and from here I re-inspected township 50, ranges 24 and 25, according to your letter of instructions. Owing to unprecedented weather conditions, we had great difficulty in taking a flying camp into township 50, range 24. Practically all this portion of the country, except the sand ridges was under water, even where mounds had been built last year. We had great difficulty in getting part of our outfit across Garden river owing to the unusual depth of water, and the bad muskeg approaches, in so doing, three of our horses were nearly drowned. We next proceeded to Kinistino, about seventy-five miles distant, a prosperous town of three hundred inhabitants, on the Canadian Northern railway, and made some corrections and resurveys in townships 46, ranges 21 and 22. Township 46, range 22 is nearly all covered with small bush. Owing to the fact that there are no survey monuments to be found, a resurvey is being petitioned for by the settlers.

Our next work was the resurvey of township 46, range 23, which was commenced on October 3, and finished on the 26th. This township is partly covered with poplar and willow. The surface is undulating to rolling and the soil generally first class. A surveyed trail to Prince Albert, closed in places, by some of the settlers, runs across this township. It was tied to several of the new monuments. The Canadian Northern railway is constructed across the northern part of the township and the station of Brancepeth is situated in section 20. All the homesteads are taken and considerable land is under cultivation. There are several rather large lakes, one of which we traversed upon request of the occupant of section 10.

Great quantities of grain and vegetables are grown in this township and vicinity. In accordance with your telegraphic instructions, dated October 8 I proceeded to Saskatoon on the 19th.

On November 4, I started on my tour of inspection of survey contracts. From Prince Albert we travelled to Carlton where we crossed Saskatchewan river on a ferry, thence along a well beaten trail to township 47, range 11, west of the third meridian. We now commenced the inspection of certain survey contracts north of Battleford.

On November 26, we left Battleford and proceeded to Shellbrook, inspecting a contract in that vicinity. From here we went to Prince Albert where we arrived December 15, in the midst of our first real heavy snowstorm.



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My next and last work of the season was the inspection of a contract north of Prince Albert in the vicinity of Egg lake.

The survey work of contractors now required by the Department is of such precision that contract surveys of to-day must be unusually well done and the rigid inspection upon completion of a contract has a strong influence upon the work, it being the exception now for a contract or portion to be condemned.

During the period of field operations, in which I was engaged last season, extending from May 4, to January 8, we made ninety-two camps and travelled by trail alone eighteen hundred miles (as far as Moosejaw is from Ottawa.) This does not include the everyday use of horses on the usual survey work, nor the freighting of supplies and firewood from various points, which frequently involved on one trip alone a journey of seventy to one hundred miles.

This proves conclusively the necessity of having good horses on a survey outfit having unusually long journeys, and in order to keep them in condition for these long trips plenty of oats must be at hand.

In the performance of my allotments of work extending over a large area of northern Saskatchewan I had ample opportunity to gather knowledge of the resources of this country.

Settlement is progressing even more rapidly than was anticipated. In every direction the land is being cultivated and the ever increasing magnificent fields of grain are sufficient guarantee and advertisement of the prosperity of this fast growing country, which as yet is in its infancy.

Last season was exceptionally backward; it was not until June 10, that the buds began to sprout, and the ice was in the larger bodies of water until June 1. The summer was wet, cold and raw; in fact, in places a slight frost was apparent every month, consequently the crops were from two to three weeks later in maturing; however, as compensation, the months of October and November were all that could be desired and the weather perfect. On November 11, most of the smaller lakes were sufficiently frozen to walk on.

Railways are gradually extending through this vast country, greatly facilitating transportation, and many iron railway and traffic bridges have been constructed over the larger rivers. Good trails extend in every direction, even in the partially settled districts, and it is an easy matter now for the settler or land seeker to travel in any desired direction.

Game of the feathered variety is to be had in great quantities, in fact in certain localities the supply appears inexhaustible. Rabbits are very scarce; it would appear as if every few years they disappear almost entirely.

Wolves were numerous and bold, so much so that they would in daylight enter a corral to kill and carry away sheep. North of Prince Albert moose and other deer were quite plentiful, and we came across many of their yards. It might be well to record here that we found some recently constructed mounds trampled flat by these animals.

The price of a team of good horses varies from three hundred dollars to three hundred and fifty dollars, oxen about one hundred dollars per yoke, and cows from forty dollars to fifty dollars each.

Farm produce commands a high price, potatoes when procurable one dollar per bag, new potatoes seventy-five cents to eighty cents per bushel, butter thirty cents to forty cents per pound, milk seven to ten cents per quart, eggs twenty cents to thirty-five cents per dozen. Of course, these prices vary during different periods of the year. Great progress is perceptible in all towns and villages. There are many handsome buildings and industries, as well as a number of splendid schools throughout the province.

The country in which new surveys are being projected north of Saskatchewan river is covered for the greater part by bush, principally poplar, spruce and jackpine, suitable for building purposes and fencing, but not in sufficient or paying quantities for lumbering.



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The soil is generally sandy loam suitable for the production of wheat, oats, flax and vegetables.

Numerous streams and lakes afford a permanent supply of excellent water.

We did not perceive any indication of minerals of economic value, stone quarries, coal or lignite veins, although it is the prevailing opinion that there exist vast quantities of coal, as yet undiscovered. In the province of Saskatchewan north of Saskatchewan river the only town of any importance or having railway connection is North Battleford, which has a population of three hundred, and numerous fine buildings, with good hotel accommodation. The Dominion Government has a combined land and immigration office here.

North and east of Battleford there are numbers of vacant homesteads, which offer to the new settler unequalled advantages, and it may be worthy of note that the climate in this northern latitude is unsurpassed, in my opinion superior in every way to that of two hundred miles farther south. Large quantities of whitefish and other varieties are obtained from many of the larger lakes.

Good trails extend in every direction except north of Prince Albert, where it is still unsettled. However, as the Canadian Northern are extending their railway into this country and are now at work constructing an iron railway and traffic bridge across the Saskatchewan at Prince Albert it is only a matter of a short time before this portion of our great country will be the objective point for the new settler. In conclusion, I wish to record my appreciation of the services rendered by my assistant, Mr. Earle M. Dennis.

I have the honour to be, sir,

Your obedient servant,

E. W. HUBBELL, D.L.S.

## APPENDIX No. 25.

### REPORT OF A. W. JOHNSON, D.L.S.

#### SURVEYS IN THE WESTERN PORTION OF THE RAILWAY BELT.

KAMLOOPS, B. C., February 8, 1908.

E. DEVILLE, Esq. LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I began the season's work at Agassiz on February 15, by resurveying lots 536 and 39, group 1, and the adjacent land.

As usual many of the original posts were missing, and I had to reconstruct these lots from what data was to be found on the ground.

There is good hill land in section 6, township 4, range 28, west of the sixth meridian and in the section immediately south of that, which, though on a hill, is very easily cleared, there being only a comparatively recent growth of alder and birch. We were so much hampered by three feet of compact snow that I ordered snowshoes for the party. There is no prettier place on the Canadian Pacific railway than the Agassiz valley, with its soft, moist climate. Fruit, hay and hops grow very well and the last named is being cultivated to a large extent. To a northwest farmer, who wants a softer climate and a beautiful home this land should appeal.

I had received instructions to survey some dyking lands on Pitt meadows as soon as possible, and judging that the snow would have gone I moved to Sturgeon slough



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on March 5, in township 40, east of the coast meridian. The whole of the undyked part of Pitt meadows is a swamp, cut up by many sloughs. I got rubber boots for the men, otherwise it would have been killing work breaking through ice and wading in cold water up to your middle for weeks. This swamp was evidently at one time part of Pitt lake, and the sloughs which cut it up are affected by the tide as is the lake itself. We had more luck finding old posts than I expected, and I have no doubt that the survey we made very nearly coincides with the original. In some cases we put long cedar posts as well as iron ones to mark corners, for the latter were sometimes below the water at high-tide. There is undoubtedly splendid land on these meadows.

The main difficulty in dyking here is, I should judge, to keep the water from seeping under the dyke. As to whether it is feasible from a business point of view I am not expert enough to give an opinion. There is someone intending to do this particular piece of work and he is probably not doing it for fun. The lake is so shallow at the south end that if dyking turns out a success I believe it can be extended in to the lake itself. As you paddle up, even in the middle, you can touch bottom with your paddle for two miles.

We were troubled a great deal by wet weather at the end of March and the beginning of April. For two weeks it hardly ever stopped raining and we were thankful not to be in the bush.

In the middle of April I went on with the traverse of Pitt lake itself. The west shore is very precipitous, the rock dropping into the water in perpendicular bluffs in many places and giving us endless trouble with the chaining and especially when planting posts at section corners or witness posts. It was not an uncommon thing to spend three hours getting a correct measurement to a point where a post could stand without the men being in imminent danger of falling off. When men are thinking more of their foothold and the rocks a hundred feet below, than of the stones they are painfully picking out of the cliff for a mound the work is not done quickly. And the fact that the chief is wondering whether the transit, already much battered, will slip over that particular edge or not, does not help matters out.

While this traverse and others on the meadows were being cut I ran a triangulation up to the head of the lake from a base on the long tangent on the Canadian Pacific railway, immediately east of Pitt river bridge. This was done with considerable accuracy, though I was bothered by funny trippers from Vancouver throwing away the large red and white signals that were conspicuous on rocks close to the water. At any rate I have no doubt that the section corners laid out around the lake and the belt limit are much more accurately placed than would have been the case had the work been carried up from the south end of Pitt meadows by traverse.

There is one way on the west side at the mouth of the small valley that offers a splendid landing for picnic parties and there is good timber up that valley.

In township 6, on the west shore are some benches with good timber which are being worked and on the east shore in the same township are similar benches, also being worked. The east shore is generally not so rough as the west, though there are two or three inaccessible cliffs that I had to climb around or work across by triangulation.

Other work was pressing so I did not traverse much more than half the lake, but went on to the north end, laid out my second base, and ran a mile or two of the actual belt limit on both sides of the water, so that timber cruisers would have no difficulty in finding it.

The mountains around the lake are not particularly high as mountains go in British Columbia, not more than five or six thousand feet, but they are very precipitous, one bare precipice piled on another as far as you can see. But at every creek mouth and on benches at other places there is good timber and a large number of logs have already been taken out to New Westminster.



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On my way to Keefers in the upper country I did two days' work at the quarry on Pitt river about which there is some dispute, and on May 27, began work at Keefers. Here I laid out as accurate a base as I could with the appliances I had, on the Canadian Pacific railway track and connected this with the nearest section corner. While I was doing this my picketman was putting up signals on both sides of the Fraser, for it was impracticable to get out of the canyon without crossing the river. Then as soon as I began to read angles I sent this man with a small party up the Nahatlatch river to plant signals on convenient peaks and to put his last two as nearly twenty miles back from the railway as he could.

It is all to his credit, and saved me much time that the actual railway belt passed about midway between his last stations which I made my second base. A surveyor will appreciate a feat of this sort. He had to canoe and pack on his back through forest without the vestige of a trail and pick out his peaks as he could catch glimpses of them through the trees or from the water and it is no exaggeration to say that had he been a couple of miles out it would have meant four or five days' extra work.

The weather went to pieces in June just as I began reading angles and on 'Two Squares' mountain I was held for ten days without a tent and with very little food, waiting on timber line for the clouds to lift. Every day we climbed the two hundred feet between camp and the signal and shivered around a poor fire in a gale of wind as the snow fell. After this however I luckily got all my other angles without difficulty, and was glad to make a close tie on my second base. Nahatlatch valley has very little if any agricultural land, but there is timber in small quantities, east of the lake and on the lake itself. West of the lake the valley is wider, up to nearly a mile, but though there is timber there, it is not in large quantities nor of good quality. From the lake to the Fraser the river is just a roaring rapid, large enough at the lowest water to develop tremendous power, for the drop is several hundred feet. The lake is not one sheet of water, but three, joined together by strips of quiet river and very beautiful. I expect that some day there will be a flourishing summer hotel on its shores and some enterprising man will build pack trails up to the basin on mount Whiskepig where one of the finest falls I have ever seen takes its rise.

These valleys on the edge of the timber must be seen to be fully appreciated and in spite of the punishment they get climbing through dense huckleberry or young balsam and windfall, there are few men, however unromantic, who do not forget their troubles when camp is pitched in the park country under the ice.

After tying on to my second base I ran the belt down to Mt. Douglas near Harrison lake where I had planted a post in 1903. This was not more than fifteen miles in a straight line from the Nahatlatch, but it was not advisable to spend weeks making a horse-trail and we carried everything on our backs. To those who have packed steadily for a month over high mountains any description is superfluous and to those who have not, no words of mine could make them realize what it is like. I believe some of the men had a change of socks, but there was little other changing done, in most cases none at all, and one man left because I would not let him carry as many blankets as he wanted. The line zigzagged over mount Whiskepig and finally ran straight for six miles to Mt. Douglas crossing three deep canyons on the way. As soon as we had packed with great tribulation up one three thousand foot precipice we found a three thousand foot hole beckoning us insistently. But at last in a thunderstorm under the ice of Mt. Douglas glaciers, a thunderstorm so strenuous that we fled into the snow and threw away anything that had iron on it, we tied on.

There is good timber on Silver creek which rises near Mt. Whiskepig, and keeps a distance of from one to three miles east of the belt along its entire course to Harrison lake; and though this creek is very rough and has two or three big falls, the timber will no doubt be taken out before long. It is all in the belt.

I did not post every section corner of this last six miles. Putting lines up those precipices is very slow work even when it is possible and it was not by any means al-



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ways so in this case. Putting posts in on a very steep slope of rock is slower work still. So I put witness iron posts and also large wooden ones on the ridges and by the sides of streams in the canyons. As it is not likely that anybody but timber cruisers and prospectors, except surveyors furnished with the necessary data, will want to find the belt here, the above method will be sufficient, for prospectors will travel on the ridges, and cruisers in the valleys.

There is the usual wilderness of peaks with glaciers here here and there. Mt. Whiskepig is about seven thousand feet high, but the Snowy Group to the west and southwest is higher.

On my way back I ran the belt across the Nahatlatch valley. At the western end of this valley adjoining the belt, the land is very low and swampy. There are three hay swamps which are solid enough to carry a horse and were the saving of our train, but they would not grow crops because both in the summer when the snowwater comes, and more particularly in a winter rainstorm, they are flooded.

When I had posted the belt in the Nahatlatch valley I put most of my men to work making a pack trail up Bear creek, which is just outside the belt, while with three men I went north to Mt. Kythe to see what could be done about getting horses through. I found an unbroken range of high mountains, the lowest pass filled with glaciers, and I determined that should it be found impracticable to take horses over this ice that I would send them around by a hunting trail above Lytton, that I had used the previous winter on a trip partly for hunting and partly to find out the best way to get horses into the belt in that part of the country. I took care to impress on the men with me exactly which of the distant mountains were approximately on the belt and then came back to camp after a rough trip indeed. I gave instructions to push the trail to the foot of the ice and to try to get the horses over; but this proved hopeless so they built a cache and left a lot of food and other things there.

Meanwhile I had taken a few men down to Chilliwak and did some work in township 2, range 29, west of the sixth meridian. This finished, I met the mountain party at Keefers and paid everybody off. This was on August 24. Next morning I started seven men off with the train and told them to go up the trail mentioned above and cut a pack trail clear through Mt. Kythe on the north side of the range. This was done successfully and I now have a trail ready along the whole length of the unsurveyed belt from the Nahatlatch to the Fraser. The party came in for the winter on October 15.

I have the honour to be, sir,

Your obedient servant.

ALFRED W. JOHNSON, *D.L.S.*

## APPENDIX No. 26.

REPORT OF G. J. LONERGAN, *D.L.S.*

INSPECTOR OF CONTRACTS AND MISCELLANEOUS SURVEYS IN CENTRAL ALBERTA.

BUCKINGHAM, QUE., Mar. 16, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I beg to submit the following report of my surveying operations for the season of 1907. I left Buckingham on April 15, and on my arrival at Edmonton, where I had my outfit of the previous season to meet me, I engaged a few men,



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bought a small quantity of supplies and started for township 51, range 21, where I had to complete the subdivision of the township. It consisted of a few miles of section line and a traverse of part of Cooking and Sisba lakes. The soil in this vicinity is a few inches of black loam with a clay subsoil and is more suitable for ranching, as great quantities of hay can be cut along the lakes and marshes. Cooking lake is very largely patronized by the Edmonton people, as a summer resort, and they have a number of tasty cottages on the south side of the lake. The wild rice in the bays is the natural feeding ground for ducks, geese and swans, and the lake is well stocked with fish. Having completed this work I returned to Edmonton and made preparations for a trip to Lac la Biche to inspect Mr. Rinfret's contract. At Fort Saskatchewan a heavy fall of snow prevented us from moving for a few days. After the storm we continued our journey by way of Star, Wostok, Andrew, crossing Saskatchewan river at Desjarlais, then to Sacred Heart and Saddle Lake. From Bruderheim to Desjarlais is settled almost entirely by Galicians. They appear prosperous as they each have a few cattle, a team of horses, and the necessary farming implements. However, I regret to say that I was told on reliable authority that a number of them had mortgaged their farms and invested the proceeds in town lots. From Saddle Lake north the trail winds around ponds and sloughs and undoubtedly was laid out by Indians. The country is very rolling and is covered with poplar and willow scrub and a few scattered spruce. The soil generally is a few inches of black loam with a clay subsoil. All along Lac la Biche and Beaver lake are located the Indian and half-breed settlers of the district. At Lac la Biche mission, which is one of the oldest in the west, is the Hudson's Bay company's trading post.

Having inspected the part completed of Mr. Rinfret's contract I moved southeasterly to Mr. M. W. Hopkins' work, examining townships 63, ranges 11 and 12 and on my arrival at Saddle Lake I received your instructions to make a few correction surveys both north and south of the Indian reservation. This I did and then moved to townships 59 and 60, ranges 1, 2, 3, 4, 5 and 6. I found the contractor at work and five townships surveyed; these I inspected and returned to Edmonton. While at Moose lake I saw a number of settlers and was told there were about thirty squatted on unsurveyed land and a few of them on the Indian hay reserve. This information I communicated to you and noticed that on my second trip you had given instructions to have it surveyed. From Moose lake to Coal lake and for about twenty miles south of Coal lake I consider the best unsettled part of Alberta. I might state that I have worked six years in the northern part of the province and never more than six weeks in the same place and therefore there is very little left of the district that I have not been over. The soil is from six to twenty inches of black loam with a clay subsoil with good water and enough prairie that a settler can get a start on, and an abundance of hay to be cut on either the highlands or sloughs. On my arrival at Edmonton I received orders to repost two other townships (51, ranges 25 and 26). When about half through this work I received your instructions for the inspection of several other contracts. It being then August 6, I made a timetable and after due allowance for bad weather to drive 1,260 miles, inspect seventy-one townships and to make two other traverse surveys, I found that in order to do the work this season it was necessary to start at once. This I did and am pleased to state that I arrived at Edmonton four days late of schedule time on four and a half months' work.

I found I could get from Edmonton to Mr. Magrath's contract, townships 7 and 8, ranges 12 and 13, with horses quicker than by train, consequently I drove. It was difficult to realize the changes in my old territory, southern Alberta, that I had left six years ago. What used to be a post office and country store on the corner of a cross-road had developed into a town of, in many places, a few thousand people, with well graded streets and good substantial buildings, and the older towns have spread themselves out on the prairie to such an extent that it was almost impossible to conceive that it was the same place that I left a few years ago. Often our old camping



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ground that was from a quarter to half a mile from town is now the residential part of the city. But it is the 'West' where people move and move quickly.

The irrigated crops are wonderful, firstly their productiveness and secondly the perfect control that farmers have over them. The principal reasons why the grains were frozen in the northern part of the province was that in the wet season the grain kept growing and did not ripen, while in the irrigated districts they have no rain and if a farmer wants his crops to ripen all he has to do is to close his head-gate or cut off his water supply and ripening commences, and at cutting time the ground is dry and the working of machinery is much easier. Having inspected Mr. Magrath's contract I moved northwesterly, passing through Taber, a new coal mining town. I did not have time to visit the mine but the geological features of the country are the same as at Lethbridge and undoubtedly it is the same seam they are working as the Lethbridge people. I crossed Belly river a few miles north of the town and then struck across the prairie about sixty miles, I came to the home ranch of the Circle outfit, and from there we had a trail to the Blackfoot Indian crossing of Bow river and to Gleichen, thence to McBeth's crossing on Red Deer river in township 27, range 17, west of the fourth meridian. This is about the centre of the south end of Messrs. Edwards', Fairchild's and Cautley's contracts. The country is very rolling except that part around the south end of Sullivan lake. Cattle ranchers say it is too rough a country for farming but on closer inspection I do not hesitate to say that at least sixty per cent is suitable for farming. The hills are long and gradual and not too abrupt to successfully and conveniently work farming machinery, except however, the centre of the west part of Mr. Cautley's work, which is extremely rolling. It consists of small round hills fifteen to forty feet high and from one hundred to two hundred yards apart. I never saw such a rolling country, in fact I did not attempt to drive across but went about fifteen miles around it. Having completed the inspection of these three contracts I moved straight north to Vegreville, passing about fifty miles east of the Calgary and Edmonton railway. All the land along this route is taken up but it has been homesteaded within the last few years and therefore farming is not advanced to any great extent. A young man wanting to pick up a homestead in a promising district would do well to go there and work out with other farmers and watch for abandoned claims. Often men make entry on land intending to farm and for various reasons, such as not having sufficient capital or getting homesick, they leave their quarter section and never return to it. Their entry can be cancelled and a new entry made. From Vegreville I moved northeasterly crossing Saskatchewan river at Brousseau thence to St. Paul de Metis, and from there to Mr. Hopkins' contract. I found the contractor still at work. I inspected the surveyed part and then moved to Mr. Rinfret's work at Lac la Biche, which I found had been completed during the summer. My next inspection was at Athabaska Landing where I had two contracts. From Lac la Biche to the Landing is forty-eight miles by straight line or a little over three hundred to go by way of Saddle lake and Fort Saskatchewan. Upon inquiry I found that the Indians have a wagon trail on the short route and on further inquiry was told that only one wagon had been over it. I therefore engaged an Indian guide and started, arriving at Mr. Cote's contract on the third day, seventeen miles east of the Landing. There is no doubt that it is the worst trail in Alberta and during warm weather it would be utterly impossible to make use of it. After inspecting Mr. Cote's contract I went to Mr. McGrandle's work which was about twenty miles west of the Landing.

The country south of Athabaska river and in the vicinity of the Landing is suitable for mixed farming. It is very level and covered in most places with light scrub. A man with a little capital to start farming here can in five years be independent. Oats are worth seventy-five cents per bushel and hay twelve dollars per ton. Everything else is about in that proportion and the prices will remain high until a railroad is constructed. It is the principal headquarters for all freighting to the north. A farmer keeping a stopping place along the road from Edmonton said he had kept a



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record of teams freighting and estimated that there were about 70,000 tons of freight carted per year to the north country. This would average about seventy teams per day. Having completed the inspection of all contracts, I returned to Edmonton where I discharged my men and went to the hospital to recover from a bad cold. On December 16, I received your telegram to complete the survey of township 52, range 21. I engaged a few men and did this work. On its completion I returned to Ottawa, arriving there on December 24.

I have the honour to be, sir,  
Your obedient servant,

G. J. LONERGAN, D.L.S.

### APPENDIX No. 27.

#### REPORT OF A. L. MACLENNAN, D.L.S.

##### SURVEYS IN SOUTHERN ALBERTA.

SASKATOON, SASK., May 21, 1907.

E. DEVILLE, Esq., L.L.D.,  
Surveyor General,  
Ottawa.

Sir,—I have the honour to submit the following report on the surveys made by me last season in southern Alberta, in accordance with your instructions dated Sept. 11, 1906:

The district surveyed, along Livingstone river, was mountainous except a narrow strip of plateau abutting the banks of the river. The soil in certain parts of this area is suitable for the growth of cereals, but the early frosts would prohibit the maturing of the same. The water is of the very best. In nearly all the streams flowing into Livingstone river there are the choicest salmon and bull-trout.

Deposits of coal are to be seen under the conglomerate peaks of the mountains on both sides of the river.

There is considerable black pine, Banksian pine and poplar.

The short *coulées* of the mountain slopes afford excellent grazing for cattle and horses.

The entrance to Livingstone valley is through the gap made by Oldman river in Livingstone mountain, and except at high water, entrance through this gap is easily made up the bed of the stream.

I have the honour to be, sir,  
Your obedient servant,

A. L. MACLENNAN, D.L.S.



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## APPENDIX No. 28.

## REPORT OF GEO. McMILLAN, D.L.S.

## INSPECTION OF SURVEYS IN THE PROVINCE OF MANITOBA.

OTTAWA, March 23, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

Sir,—I have the honour to submit the following report on my past season's work in the province of Manitoba.

I left Ottawa on April 26 and arrived in Winnipeg on April 29. After making some preparations in Winnipeg I left for Piney to get the outfit and transport used the previous season by Mr. Grover. The horses were so thin that they could not stand hard feed and on reaching Winnipeg I was obliged to secure the services of a veterinary. I was delayed over a week there till the horses got better.

I completed my outfit on May 14 and on the next day reached Lac du Bonnet via Canadian Pacific railway. The ice had not then left Winnipeg river and I was delayed till May 24, when the ferry made the first trip across the river, and proceeded to inspect contract number two of 1906, where I arrived on the same day.

This contract includes township 14, range 12, east of the principal meridian and is traversed by Pinawa channel. This contract is densely timbered with large poplar and small spruce, the larger spruce having been cut off. In section 32 of this township there is erected a large electric power-house, the property of the Winnipeg Electric Street railway. The company has constructed a good corduroy road from Lac du Bonnet crossing as far as section 2. The soil is largely swamp except the strip bordering on Pinawa channel, which is of excellent quality. There are no people living in this township except the employees of the Winnipeg Electric Street railway. Moose and deer are abundant.

From this work I proceeded by boat up Winnipeg river to contract number three of 1907. This contract includes townships 15 and 16, ranges 14 and 15 east of the principal meridian. There are five portages including Pointe du Bois rapids on all of which fine water-power is available. Pointe du Bois appeared to me to have the best location for the development of power on Winnipeg river and it is the rapids selected by the city of Winnipeg for the erection of a power plant, and a railway is being built from Lac du Bonnet to connect therewith. The soil in these townships is, with the exception of the strip bordering on the river, swamp or rock and timbered with scrub jackpine and spruce. There is also much floating muskeg. Moose and deer are plentiful and the river swarms with fish especially sturgeon. I completed the examination of this contract and on June 29 reached the corduroy road on my return. From there I travelled to Lac du Bonnet and then by Canadian Pacific railway and Canadian Northern railway to Dauphin to examine contract number nine of 1906. The townships of this contract were so wet that I had to abandon the work after examining township 26, range 14, west of the principal meridian. I next proceeded to Gimli arriving there on July 18 and completed the addition to the townsites in eight days. Gimli is an attractive spot and at present is the terminus of the branch of the Canadian Pacific railway. There are many fishermen resident there and the abundance of whitefish in lake Winnipeg affords them ample employment.



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I next proceeded to make a resurvey of township 18, range 10, east of the principal meridian. I shipped by the Canadian Pacific railway to Selkirk and thence by boat to Fort Alexander arriving there on July 30.

This township is densely timbered except the parts improved by the farmers, and it is traversed by Winnipeg river. On both sides of the river there is a strip of excellent land, while farther back it is swampy and in some instances floating muskeg. It is not at all settled except on the lots fronting on the river. Farming is the chief industry but lumbering is carried on considerably and there are two saw-mills in the vicinity. There are several water-powers, although none have yet been developed. In section 1 is the famous Silver falls rivalling the Pointe du Bois rapids. There is an abundance of wild fruit including plums, cranberries, blueberries and other wild fruit. Moose and deer are abundant.

I completed the survey of this township on October 7, and proceeded to Manitoba House settlement.

This settlement borders on lake Manitoba and is in township 22, range 11, west of the principal meridian. It extends for about one mile in an easterly and westerly direction and six miles in a northerly and southerly direction. The lots are not uniform in size. Along the lake it is open and marshy and more remote from the lake it is densely timbered with poplar and willow scrub.

The chief industries are stock raising and fishing and much hay can be procured. The provincial government has expended considerable money on the trail through the settlement recently. I made a traverse of this trail and next proceeded to township 21, range 10 west of the principal meridian.

I made a resurvey of the sections affected by the lake lots in this township. The same conditions prevail as in township 22, range 11, except that it is more thinly settled. I completed this work on December 16, 1907.

I next proceeded to the examination of contract number nine of 1906. This contract comprises township 25, range 11, and townships 26, ranges 11, 12, 13 and 14, all west of the principal meridian. They are largely made up of swamps and sloughs separated by poplar ridges. The soil is largely of third quality and quite inaccessible in the summer season. Game consists of moose, deer, elk, wolves and coyotes. There are but six families resident in these townships. They are engaged in stock raising and live along lake Manitoba. I completed this examination on January 7 and proceeded to contract number twenty-seven of 1906.

This contract comprises townships 16 and 17 ranges 9 and 10 east of the principal meridian. The soil is of third quality being composed of large muskegs separated occasionally by sand ridges. It is densely timbered and contains some patches of valuable spruce and tamarack. It is quite inaccessible in summer. I completed the examination of this contract on January 25, 1908 and proceeded to Mr. Watt's contract. I examined five townships of this contract, townships 13, 14, 15, 16, range 13 and township 14 range 14, all east of the principal meridian. These townships are densely timbered, there are some valuable spruce in all of them. The soil is of third quality and consists entirely of muskegs, swamps and rocks. Township 15, range 13 is traversed by a railway being constructed from Lac du Bonnet to Pointe du Bois. Winnipeg river traverses townships 14, ranges 13 and 14, and at some meridian crossings is very wide. Game consists of moose, deer, foxes and coyotes. As this completed my work for the season, I stored the outfit at Lac du Bonnet on February 18, 1908 and returned to Ottawa.

I wish to express my entire satisfaction with the service rendered by my assistant Mr. W. L. MacIlquham.

I have the honour to be, sir,  
Your obedient servant,

GEO. McMILLAN, D.L.S.



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## APPENDIX No. 29.

## REPORT OF C. F. MILES, D.L.S.

INSPECTION OF CONTRACTS AND MISCELLANEOUS SURVEYS IN SOUTHERN SASKATCHEWAN.

TORONTO, March 17, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

Sir,—I have the honour to submit the following general report on my field operations during the past season in the province of Saskatchewan, comprising inspection of subdivision contracts, surveying of townsites, resurvey of townships, and investigating and correcting some differences between settlers under instructions, bearing date respectively April 5, April 24, July 17, August 21, September 6, September 18, October 1 and November 6.

Owing to my outfit being wintered about thirty miles southwest of Calgary, I engaged a man to go to Calgary. He left Toronto on April 16, arriving at Calgary on the 20th. Here he hired another man to assist him in bringing in my outfit to be shipped to Moosejaw. They loaded it on a car on the 23rd and arrived in Moosejaw on the 28th, the same day I arrived there from Toronto. We got under canvas the following day, had the horses (which were in very poor condition after one of the most severe winters that had been experienced for some years), shod, fed up, and repairs made to my wagons, harness, &c., &c.

In the meantime, I sent out some men to bring in the horses and outfit used by Mr. Warren, D.L.S., last season from Mr. Nicolle's, Buffalo lake. They returned on the following day, accompanied by Mr. Nicolle, who had the wintering of the outfit, but one mare was missing. According to your instructions, I turned the horses and outfit over to Mr. C. C. Smith, D.L.S., together with three pack saddles of mine, that he could make use of in his mountain work. On account of the mare being missing I did not pay Mr. Nicolle's charges for wintering. I informed him that I would have to submit the matter to the Department, more particularly, as it appeared to me his charges were excessive. I had several communications from him since but as he could neither produce the missing mare, nor prove her death, I did not feel justified in satisfying his demands.

The trails, all the time, were in very bad condition for travelling, the prairie being flooded for miles in the lower places. However, we broke up camp at Moosejaw on May 8, and made a start for Chaplin to lay out a townsite, having ascertained that the trails to the south were almost impassable. Snowstorms were of daily occurrence on the trail to Chaplin, where we arrived on May 10, going through numerous drifts of snow, necessitating our taking to the hills most of the way. Up to Parkbeg from Moosejaw, about forty miles by trail, the country is pretty well settled, beyond this point it becomes very sandy with but few settlers' houses visible from the trail, which runs parallel to the Canadian Pacific railway.

Chaplin is a small railway settlement with probably little more than fifty inhabitants, most of whom are connected with or dependent on the railway. There is a tank here, the water of which is brought by gravitation from springs in the hills, about one mile to the north. This is also a coaling station; the old sheds were being replaced in the fall by coal chutes. To the south, lake Chaplin approaches within half a mile



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of the village and between the village and the lake there are no settlers. To the north for about sixteen miles it is rather sparsely settled beyond that the soil is much improved, and settlers are plentiful, a number of new ones coming in while we were camped there. While making a preliminary survey of the outlines of section 29, township 17, range 5, west of the third meridian I ascertained that the pipe carrying the water from the springs to the tank at the station was not on the water-right of the Canadian Pacific railway in the westerly half of parts of sections 29 and 32, but on the easterly half, whereupon I communicated with the Department on the subject and also about crossings which had not been located by the Canadian Pacific railway. Receiving a reply from the Department not to delay on that account, I broke up camp at Chaplin on June 4, and took the trail for Moosejaw, arriving there on the following Monday. Here we laid in a fresh lot of supplies, oats, fuel, and lath for pickets, and left for the south on June 5.

There is a fairly good trail to the south leading to Wood mountain, Northwest Mounted Police post. About sixteen miles out a trail branches off leading to Willowbunch, this being the regular mail trail, the mail being carried twice a month from Moosejaw to Willowbunch, and thence to Wood Mountain outpost. A government telegraph line runs parallel to the trail as far as the outposts, thence to Willowbunch, its terminus. We arrived at section 11, township 10, in range 30, west of the second meridian on the following day, where we camped beside a snowbank in a ravine, water being rather scarce in that immediate vicinity. We examined the work in several townships of contract No. 25, of 1906, and found that this contract was unfinished, many of the monuments not having been completed. From here I also ascertained that the pits had not been dug in contract No. 13, in range 1. From here we moved south and examined the townships in contract No. 10, of 1906, lying west of 'Lake of the Rivers.' There are extensive alkali flats to the south of this lake, traversed by a small creek, without any current at that time. The lake lies between banks from seventy-five to one hundred feet high, and this depression continues beyond the lake for many miles, in a southerly and easterly direction, the bottom being more or less alkaline, averaging over half a mile in width. I have followed this valley myself for nearly sixty miles to township 3 in range 23, and am told that it continues beyond. I had to take my outfit around by the southerly tier of sections in township 7 to avoid this flat, and the ravines running into it. Although the land in these townships was opened for settlement only a few months ago the majority of the homesteads are entered for. After examining the remaining townships east of 'Lake of the Rivers' in this contract, and ascertaining that in township 9, range 28, the monuments had not been completed, I started north on the Willowbunch and Moosejaw trail on June 22. This trail traverses a very hilly country up to within about ten miles of Moosejaw. My outfit arrived in Moosejaw on the 24th and the following afternoon, after laying in some new supplies and having repairs made, we left on the trail running north to Tuxford, the present terminus of the northwestern extension of the Canadian Pacific railway from Moosejaw. Tuxford, of very recent origin, is quite a thriving village, with several elevators, stores, &c. Another village called Brownlee is situated about the northwest corner of township 19, range 29, west of the second meridian. It started only the past year, and has already a number of stores, hotel, and other buildings. The homesteads along here are all taken up, and also most of the company lands are occupied.

I completed the resurvey of township 21, range 1, west of the third meridian, and on July 9, moved camp from section 16, township 21, range 1, to section 9, township 23, range 3. Here I reran the lines south of Sana lake and the Qu'Appelle which is a very small stream in this township. Between the lake, the river, and the adjacent banks this township is pretty well cut up. The soil is light and only the southerly tier of sections settled upon. Finding more than one monument at many of the corners, I abandoned this work for the present, until I could communicate with the



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Department, and on July 15 moved camp to section 9, township 24, range 1, west of the third meridian. This township is fairly well settled, most of the homesteads being occupied. From this township there is a good graded road that leads into Craik, a village of probably five hundred inhabitants, on the Canadian Northern railway, about seventy-two miles northwest of Regina. There are several elevators, stores, hotels, and a bank here, and settlers come from quite a distance to trade. I finished the resurvey of township 24, range 1, on July 24, and moved camp the following morning to section 21, township 24, range 2. I worked but a few days in this township when your telegram was received instructing me to proceed at once to contract No. 13, of 1906. We started on July 29, and arrived at Swift Current on August 2, but owing to heavy rains, only reached township 11, in range 12, west of the third meridian on the 5th. Between Swift Current and this place we passed through a well settled country, there being quite a large settlement of Mennonites, who occupy about half a dozen villages (some not more than a couple of miles apart) in that district. Most of them came from Manitoba, and being frugal and industrious, they appear to prosper wherever they settle.

In the westerly portion of this contract No. 13, of 1906, I examined the remaining four townships, viz., 11 and 12 in range 12, and 10 and 11 in range 13; the surface is high, rolling and well adapted for ranching; a fine creek runs through the northerly part of township 11, range 12 fed by springs in the adjoining township to the west. There are but two or three settlers in these four townships; one of them in township 11, range 12, is a rancher; he has both horses and cattle. This section of the country appears well adapted for this business. The other settler was a more recent arrival and had but a small outfit; but all appear sanguine of success. Having lost a horse while in township 24, range 2, I purchased one from Mr. Alfred Russell, the rancher above mentioned. We broke up camp again on August 10 and started for the easterly portion of contract No. 13. We crossed Mosquito creek during the morning, and some time in the afternoon made the 'Turkey Track,' 'Brand Bull' and 'Hay Camp,' the 'Home ranch' being about twelve miles to the north. It was this ranch which met such very heavy losses during the past severe winter. They were supposed to have by book-account, some 18,000 cattle, but, I am informed, they rounded up last spring not more than one-third of that number. The losses by the ranches in this district all through were very heavy. After crossing Notukeu creek at the 'Hay Camp' we struck the old Fort Walsh to Regina trail, pretty well obliterated, and followed this for a couple of days, which brought us to the French Canadian settlement on Wood river. The country we passed through is mostly rolling prairie, and south from the creek appears very dry. There were no settlers met with until we neared Wood river. On account of the water being scarce, and not knowing whether we would meet with any more, we camped here, and the following afternoon reached section 2, township 10, range 1. I succeeded in taking an observation the same evening. While camped here near the Wood mountain trail we were often visited by homestead seekers, who were anxious for information on many different subjects, as to trails, homesteads, soil, water, fuel, etc., etc. Townships 7, 8, 9, 10 and 11, in range 1, in this contract are more or less rolling prairie, township 10 being somewhat hilly, interspersed with ponds. The nearest wood for fuel may be obtained about forty miles to the south, and the nearest coal in township 7, range 27, west of the second meridian, probably a distance of fifty miles by trail, it being situated at the east of 'Lake of the Rivers.' From here I sent a team to Moosejaw for supplies, including also some wood for fuel. I finished the examination of this contract (No. 13) on August 23, and on the following day moved camp to section 7, in township 6, range 29, to contract No. 17 of 1907. The outer edge of Wood mountain extends to this place and the surface is comparatively rough and hilly, ravines are frequently encountered containing timber, mostly poplar of not very large size, but settlers from a considerable distance come here for their fuel, and also for fence poles. The soil is principally a sandy loam. There are a few settlers in the



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valley, most of whom are French half-breeds, who possess small herds of cattle and a number of horses, not much land being cultivated. I completed the examination of this portion of contract No. 17, on September 6, and moved camp to Willowbunch village on the following day. Here we got additional supplies, oats, etc., etc., and left again for the east on the 8th. At Holliss' on the 'Big Muddy' about sixteen miles south-east of Willowbunch, I split up my party and sent my assistant with six men down the trail along the Big Muddy to the international boundary, thence to townships 1 and 2 in ranges 17 and 18 west of the second meridian, where they arrived on the 10th. On the creek near where it crosses the boundary there is an outpost of the Royal Northwest Mounted police; their camp is close to a seam of coal from where they draw their supply of fuel. All this country is well adapted for ranching, water and feed being in abundance. These four townships are more or less hilly and stony, the soil consisting principally of a sandy loam. Leaving Holliss' on September 8, we travelled east along the big valley before mentioned for about fifteen miles to a house on the south side of the valley. As we had come across no monuments we visited it and found it occupied by a family from one of the provinces in eastern France. They had been there less than a year, and not having any near neighbours had not acquired the English language. They have a comfortable house shingled and painted, a good stable, and a large quantity of hay. They own five or six horses, and quite a number of cattle. The next morning one of the men took us to some pits which were on the south boundary of section 3, township 4, range 24. A good deal of hay has been cut along the edges of the valley, but out towards the centre it is mostly hardpan, with but little vegetation. I examined townships 4 ranges 23 and 24. The surface is rolling prairie and the soil black loam with, in many instances, a gravelly clay subsoil. A number of horses were seen here at large, grazing in the marshes, but, as there are no settlers in these townships, they may be owned by some ranchers to the southwest. We moved camp on September 12, to Willowbunch about twenty-five miles westerly. It was a cold day and showery, varied by hail, and a slight flurry of snow, the first of the season.

On the 18th, when my assistant and party joined me we left Willowbunch for townships 9, ranges 26, 27 and 28. About seventeen miles distant the Moosejaw trail crosses that alkaline valley before alluded to. It runs from 'Lake of the Rivers' to Willowbunch lake, and I was gratified to see a gang of men employed fixing up the trail across the flat. It used to be a bad place, so many teams getting mired in it. When I first crossed it in June, a wagon was still standing there, where out of a team of four horses, two had been drowned. Now there is a bridge and the approaches are considerably raised. As there is a good deal of freighting on this trail it will be a boon to freighters and travellers. We camped at a place called 'Bickner's,' a deserted house, where a man by that name had homesteaded on a wrong (an odd) section. Here we split up again, my assistant, with cook and five men, going to townships 9 ranges 25 and 26, while I followed up the Moosejaw trail, as far as townships 9 ranges 27 and 28. It passes through pretty good country, there being a few settlers between it and 'Lake of the Rivers.' In ranges 25 and 26 there are some alkali lakes, the soil in the sections surrounding them generally being sandy and gravelly. In township 9, range 27, also part of contract No. 17, the surface is rolling and the soil a black loam with a clay subsoil. Township 9, range 28, is a part of contract No. 25 of 1906. The land is similar to that in range 27. On September 22 I was joined by my assistant and party at 'Bickner's' and then we camped at a spring on section 35, township 7, range 28. This spring is situated on the north side of the alkali flat before alluded to, and is somewhat strongly alkaline. I sent a man along the flat south of 'Lake of the Rivers' and he reported that with teams it would not be possible to pass around the lake. So, on the following morning we went back to the Moosejaw trail, and struck south along the new road constructed across the flat. It was a long detour, but we managed to make camp the same evening on the southeastern quarter of section 5, township 10, range 29, this being in contract No. 25 of 1906. On the



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way we passed quite a number of empty shacks, holding claims of homesteads some of which had been blown down, and completely demolished. We also passed a settler who had come there only in the spring; in the meantime he had built a house and stables, put up a large quantity of hay and had harvested a good crop of oats, besides breaking up a good many acres. This is on section 18, township 8, range 30. After examining of this contract (No. 25 of 1906) we moved west on the 25th to examine the extension of the same contract on Wood river, where there were four townships to inspect. Here there is quite a large colony of French Canadians. There is a priest domiciled amongst them, but they were still worshipping in a large tent on the east side of the river, which is now spanned by a bridge on the third correction line. Much of the material for the church, which is to be erected on the west side of the river, was already on the spot, and the building by now is probably in course of erection. There is also a post office established under the name 'Gravelburg' not far from the church site. A number of comfortable houses had been put up and large piles of wood for fuel which had drifted down the stream from the hills were observed beside the dwelling houses. Considerable areas of breaking also had been done, and was in progress of being done. After examining this contract we continued the inspection of the extension of Mr. Parson's contract (No. 17). There were ten townships lying on both sides of Notukeu creek. They are good townships and well adapted for settlement. They are mostly undulating prairie, the soil being black and sandy loam, with a clay subsoil. We moved camp on October 1 to section 18, township 12, range 6. My assistant, with part of the party moved across to the north side of Notukeu creek, while I moved west. We completed our examination here as far as the subdivision had progressed, and on October 5 we all set out together for Mortlach, on the main line of the Canadian Pacific railway, where we arrived on the 7th. After crossing Notukeu creek at the French settlement, on a bridge recently constructed, there is a good trail; we followed north along Wood river for some distance and then turned north on a trail leading through the hills. Here we passed several settlers who are interested in cattle raising. There is good pasture and also good springs, and it is therefore well adapted for cattle raising, hay also being plentiful. When we reached the northerly edge of the hills a very fine view presented itself, a flat extending up to Mortlach dotted with homesteads and stubble fields, over which thousands of wild geese were hovering. Descending into the valley, and passing the stubble fields, flocks of geese arose, alighting again in some more distant fields. At Mortlach I had the horses shod, and then moved on to Chaplin, where I changed the Canadian Pacific railway water-right from the westerly half of the north half of section 29 to the easterly half, and also made a change in the survey of legal subdivision 11 of section 29. Having finished the work at Chaplin on the 14th we proceeded to Ernfold to lay out a townsite of that part of section 21, township 17, range 7, west of the third meridian, lying south of the Canadian Pacific railway right-of-way. From here, on the 16th, my assistant with cook and four men returned south to range 2, to examine townships 7, 8, 9, 10, 11 and 12, being an extension of Mr. Parson's contract (No. 17), which work was not ready for inspection when we left that vicinity on October 5. Completing the survey of Ernfold townsite, we started again for the south on the 21st, passing through another flourishing Mennonite settlement, and camping on their premises one night. Heavy fire had passed through here a few days before consuming nearly all the pasture. At this point, however, this settler had saved the pastures on two sections by very hard work. The next night we reached a ranch where there was any quantity of hay at our disposal. There were probably between four and five hundred tons, much of it the former season's hay. The following morning after crossing a bleak and black range of hills we reached the home ranch of the 'Turkey Track Brand,' where we were also entertained, and got accommodation for the horses. That evening we reached their hay camp, about twelve miles south. From here I inspected the four townships 11 and 12, in ranges 9 and 10. They are mostly undulating prairie



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with sandy and clay loam soil. We completed our inspection here on the 26th, and left again for the 'Home ranch.'

From here we went north across hill and dale and burnt prairie direct for the nearest point on the Canadian Pacific railway. We arrived at Herbert on the 28th, and thence followed the trail along the railway to Morse, a comparatively new town, with stores, hotel, livery stables, etc., etc. The whole party on the 30th went north again from Chaplin, for township 24, range 1, west of the third meridian. I took the train for Regina, thence to Craik, where two of my teams were to meet me. These arrived there on November 2. With three men I left Craik for Mr. Dennis' place on section 20, township 23, range 25, west of the second meridian. We passed through a small town, Aylsworth, on the Canadian Northern railroad, where there are two elevators, and there were probably over fifty teams waiting to turn their wheat into these. I have already reported to you on my work on the east boundary of township 23, range 26. We finished this work and returned to Craik on November 7, reaching the main camp on section 9, township 24, range 2, on the following day. From here we completed the resurvey of this township and of the adjoining one, township 23, range 2. The former township is well settled, except those homestead sections bordering on the west boundary of the townships where the land is very sandy and bushy. On November 15 being in Craik, I received your instructions to inspect D.L.S. Waldron's contract (No. 25) of 1907, and on the 19th started four men with part of the outfit for Gull Lake, where I with my assistant, would overtake them by rail. We, in the meantime, completed resurvey of township as indicated above. We overtook the outfit at Gull Lake on the Canadian Pacific railway on the 26th but owing to the non-arrival of our camp outfit, we could not leave for our destination until the following afternoon. There are a number of settlers along the trail south to township 8. On section 36, township 8, range 20, west of the third meridian, there is located one French family recently arrived from France. There were seven in the family, and none of them could speak a word of English.

South of these no settlers were met with. We camped that night on a lake at the southeast corner of section 2, township 8, range 20, the only water then in sight from this camp. We inspected townships 8, ranges 19 and 20 and the following day moved camp east to section 14 township 8, range 18 on a fine little creek, where a patch of probably one hundred acres had escaped the fire. From here I examined several sections in townships 8, ranges 17 and 18. There being no feed for the horses I did not proceed any farther east, but moved west to Stearn's ranch on the southwest quarter of section 20, township 8, range 20. The westerly half of this township is somewhat rough, broken by creeks from the hills as is also township 8, range 21. There are a number of settlers ranching on a small scale, along the eastern slope of Cypress hills it being well adapted for cattle or horse raising. There is abundance of good water, good pasture, both at the base and on the top of the hills, and shelter in the ravines which are more or less timbered. The easterly halves of township 8, range 19, and township 8, range 20, are undulating, rolling prairie, and are well adapted for mixed farming, the soil being sandy loam and black loam, in many places eighteen inches deep. Townships 8, ranges 17 and 18 are hilly and fairly well watered, the soil consisting of both black and sandy loam. We completed the inspection of this contract (No. 25 of 1907) on December 4 and the next morning started on our return to Gull Lake. The trail was good both going and coming; but at the crossing of Swiftcurrent creek there are bound to be difficulties at that time of the year. The stream there is not more than about two rods wide. It was frozen over and the ice in midstream was covered with a foot of water. The troublesome part was getting the horses, whose shoes had worn smooth, across the ice. After that we could manipulate the wagons with ropes and long chains. \* We arrived at Gull Lake the same evening. I may mention here that although the station on the main line of the Canadian Pacific railway is named Gull Lake, the lake itself is a few miles to the



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south. I may here also mention that while on our way to the railway on December 5 we saw two men on mowers cutting hay. It was a very fine day so that it did not appear so much out of season. From here I took train for Swiftcurrent station where I was obliged to remain for the night, and thence to Chaplin, where I awaited the arrival of my outfit which got there on December 8.

Some of my men were paid off, and on the following day with only a small party I started by train for Weyburn, where we arrived late on the evening of the 10th. Here I hired a conveyance, and we drove out to the southwest quarter of section 34, township 6, range 14 west of the second meridian, where we camped in a vacant house. Here I retraced the east boundaries of sections 28 and 33, and in measuring north from the northeast corner of section 21, I found the error in the first mile.

We returned to Moosejaw and Chaplin on the 13th, where I found your telegram instructing me to return south to re-examine contract No. 10 of 1906. Up to the present the weather had been fine, and what little snow had fallen had disappeared again, so I had no hesitation in going south with wagons. My outfit left Chaplin on the 14th, and after having the horses sharp-shod at Moosejaw, I left there on December 17 by the Willowbunch trail, with three teams and five men. Proceeding south, the snow became deeper, and travelling heavier. At the head of 'Lake of the Rivers' we took to the ice and travelled along the lake for about twelve or fourteen miles, reaching Bickner's on the northeast quarter of section 1, in township 8, range 28. There I re-examined four townships. We then drove west along the alkali flat south of 'Lake of the Rivers,' which was impassable during the summer, to section 24, township 8, range 30, there being about a foot of snow, and no feed for the horses, I stabled them at Mr. Lee's on section 18, township 8, range 29, as he had a good supply of hay. From here we moved to township 7, range 30, where we arrived on Christmas day. There we completed the re-examination of this contract. Although there are not many settlers in these townships just now, yet most of the sections available for homesteads are entered for and many small shacks were erected during the summer, which probably will be occupied by next spring. Another reason why an impetus will be given to the early and rapid settlement of these townships is the fact of the proposed railway between Weyburn and Lethbridge having been located all along township 8, nearly as far as the eastern slope of Cypress hills, where the line diverges to the south. I would have gladly re-examined part of contract No. 13, but for the difficulties of moving about with wagons in the snow and the scarcity of fuel.

I have examined five contracts, comprising seventy-two townships and have reported on sixty-nine of the same, besides which I made a restoration survey of three townships, surveyed two townsites on the main line of the Canadian Pacific railway and made some minor correction surveys. In order to reach these various places, the distance travelled by my outfit was about 2,200 miles, which does not include the mileage from the various camps to work and return, day by day. I finally returned to Moosejaw on December 30, stored part of my outfit there, and sent the horses with the remaining part to Chaplin, thence taking the horses to a homestead in township 21, range 5, west of the third meridian, where one of my men had made preparations to receive and winter them. After paying off the last of my men I arrived home in Toronto, on January 10.

I have the honour to be, sir,  
Your obedient servant,

C. F. MILES, D.L.S.



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## APPENDIX No. 30.

## REPORT OF W. F. O'HARA, D.L.S.

## SURVEYS IN SOUTHERN ALBERTA.

OTTAWA, ONT., January 1, 1908.

E. DEVILLE, ESQ., LL.D.,  
Surveyor General,  
Ottawa.

SIR.—I have the honour to submit the following general report upon my work for the season of 1907 :—

I left Ottawa in April for Pincher creek, Alberta, where I organized a party. My work generally was greatly retarded by incessant storms and heavy rains. The roads were almost impassable from the town to the foothills of the Rocky mountains where my work was. It was necessary to resort to the use of pulley, block and tackle, using great mechanical power, to move my outfit in many places.

The work consisted of the production of the second base line across ranges one and two, west of the fifth meridian, and the subdivision of the adjoining townships.

The country generally in this region is very rough and mountainous, there being very little land suitable for agriculture. The chief industries consist of lumbering, mining and drilling for both gas and oil. There is evidence of an oil field on the east slope of the Rockies containing an area of about 1,800 square miles.

Already several companies, which have been operating there, have met with much encouragement, but it may require several years to properly develop the industry. Their progress will be watched with great interest, because I understand from tests which have been made that the petroleum found is of the highest grade. It will be necessary to drill at least 3,000 feet, before large supplies can be obtained. If the early operators meet with anything approaching the success they have reason to expect, there will be a rush of speculators into that part which will greatly boom southwestern Alberta and the production of high grade petroleum may become one of the chief industries of the province.

Coal also exists in large quantities but the fields have not yet been developed to any extent in that part of the country, although small quantities are being mined for local use.

Townships 4, ranges 2, 3 and 4, west of the fifth meridian consist almost entirely of lofty and rugged mountains, and great difficulty will be experienced in subdividing them. The townships are included in the petroleum field. Oil-rock outcroppings were observed on Southfork river, Gladson and Mill creeks, and no doubt this evidence will be followed later on by sinking wells in likely places on these streams, in the above mentioned townships, which are now in unsurveyed territory. It will be scarcely possible to follow the provisions of the 'Manual of Survey' here. In the first place, road allowances surveyed in the regular way, are useless. This applies to large parts of townships 5, ranges 2 and 3, where a system of reserving about two and one-half per cent of the land for roads would be much more suitable for the locality. The best method of surveying the townships above mentioned, would be to lay out roads in the valleys following the best natural grades. The lines should be well opened out, carefully traversed and measured, planting hubs or posts



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at every deflection. These then could be used as base lines, in conjunction with a system of triangulation for the purpose of determining distances throughout the townships. Owing to the broken and mountainous character of the country, it will be found a physical impossibility to chain the lines of the sub-division work, although they can all be transited. The work generally would be within the sphere of a topographical survey rather than treated and surveyed under the third system of survey. The work of surveying roads where they can be travelled seems to be left to the local government, and in the meantime there is no end of trouble among the settlers, who close up wagon trails which pass through their respective farms, and which have been broken in best places and travelled for some years. The public, therefore, under these arrangements are obliged to turn into some swamp or ravine, where they find great difficulty in travelling. Whereas if a settler or homesteader obtained a title to only 97½ per cent of the area within his quarter section limits the rest being reserved for a highway, he would have no voice in the matter if his land happened to be situated in a valley through which the public had established a highway.

Hay, oats and hardy vegetables can be successfully grown in the valleys where the soil consists of a rich black loam and clay, but at present the crops are rather risky. After a large area is opened and broken, the climate is likely to become more moderate and wheat can then be more successfully grown. But at present summer frosts injure all tender crops.

Agriculturists will therefore do better by confining their attention to the more hardy crops for a few years, before going extensively into wheat growing.

The hog and dairy industries are greatly neglected in southern Alberta. Both pork and butter are selling too high every year. Vegetables are also in great demand, large quantities of which are shipped there in cans, and no person seems to supply the demand.

Prices of potatoes, carrots, onions, cauliflower, cabbage, turnips, parsnips and celery are three or four times higher than those in Ontario, and all these vegetables will do well in southern Alberta. Nearly every settler who takes up land grows hay and oats, and raises a few cattle or horses, never thinking of how well a crop of celery or cauliflower would sell; whereas if farmers properly farmed or gardened a smaller area as they do in Ontario, there would be much more prosperity in the country, in the event of a crop failure, than at present when everyone is depending upon the success of one crop.

The season was unusually wet during the summer which greatly retarded our progress. The bad weather culminated with the most severe storm of snow I ever experienced. We were camping in township 5, range 2, at an altitude of 6,000 feet during the storm, which began on the morning of the 10th of September, and lasted until the evening of the 13th. During the night of the 10th the greatest precipitation occurred, there being about two and one-half feet of snow in the morning of the 11th. After the storm subsided the depth of snow averaged from three and one-half to five feet. The wind was from northeast and the barometer was unusually high. On the night of the 10th the storm was accompanied by flashes of lightning which occurred at remarkably equal intervals of about fifteen seconds, and judging from the time elapsing between the flashes and the thunder, the electrical disturbance must have been about two miles away. I made a great many inquiries and no one in the neighbourhood experienced a flash any closer. Therefore the storm must have been at an altitude of about 16,500 feet, which accounts for the extreme height of the barometer. Were it not that the atmospheric pressure was so great clouds could not have been supported at so great a height. The great depth of the snow falling in so short a time is also evidence that a strata of the atmosphere of very unusual thickness was discharging moisture.

The crops of wheat and oats which were very late and remained uncut were completely buried. Not a head could be seen and it looked at one time like a total loss.



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However, after a few days the snow melted and some ingenious men came to the rescue by devising some specially long lifters, attachments placed in front of the knives of the binders and mowers, which lifted the straw, so that the crops could be cut. The final outcome of the agricultural pursuits were on the whole satisfactory, on account of the prevailing high prices, due to crop damage in other parts of the world.

I have the honour to be, sir,  
Your obedient servant,

W. F. O'HARA, D.L.S.



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## APPENDIX No. 31

## REPORT OF W. R. REILLY, D.L.S.

RETRACEMENT AND RESTORATION SURVEYS IN NORTHERN SASKATCHEWAN.

REGINA, February 25, 1907.

E. DEVILLE, Esq., L.L.D.,  
Surveyor General,  
Ottawa.

Sir,—I have the honour to submit the following general report concerning my operations in the field from August 5 to December 9, 1907, pursuant to your instructions of July 15 and subsequent dates:—

Your instructions were to organize at Saskatoon and apply to R. H. Hall, Esq., manager, Hudson's Bay Company, Prince Albert, for surveyor Wallace's horses. I communicated with Mr. Hall at once and received a reply.

I left Regina on August 5 and expected the horses would be in Saskatoon by the time I arrived there. Owing to the fact that a letter to Mr. Campbell who had care of the horses was addressed to the wrong post office the horses were not delivered to me until the 8th. In the meantime I had everything in readiness except the rigs.

I experienced some difficulty in procuring a cook. I was at a disadvantage in procuring this help, as both the Canadian Pacific railway and the Grand Trunk Pacific railway were paying much higher wages for the same work on their construction survey parties than my instructions allowed. On the arrival of the five horses, which turned out to be small ponies not in the best condition, I purchased another pony, the only one available at a reasonable figure, and three democrats. To have purchased lumber wagons would have been a great mistake, as a wagon alone would have been load enough for these small ponies.

When working on contract work I used democrats. I found that I could transport with ease loads that I could not have handled on wagons with the same horses. These ponies had been used to packing and required breaking in to harness. I started them out with light loads and soon had them going all right.

We left Saskatoon on August 9 to mound townships 41 and 42, range 27, west of the second meridian. We crossed the river at Saskatoon and proceeded by trail northeasterly to Aberdeen on the Canadian Northern, along the railway to Vonda and northeasterly from Vonda into township 41, range 27, which was mounded first, then into township 42, range 27. The trail from Saskatoon passes through a good country for grain growing and mixed farming. Some very fine growing wheat and oat crops were seen along the route. The best were within a short radius of Aberdeen and Vonda. Like the majority of crops in the province they were damaged by frost later on. The mounding in township 41, range 27, was completed on the 20th and in township 42, range 27, on August 26. These townships are similar in character. The surface is rolling to hilly with numerous sloughs and small lakes and is more or less dotted or covered with poplar bluffs and willow brush. The soil is mostly a good sand loam. Some homesteads are very much broken by lakes and hills. A large majority of the homesteads are settled on by Galicians. These people are farming so as to produce the most of their living direct from the farm. They started with small means and are gradually making comfortable homes for themselves accord-



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ing to their way of living. Scarcely any of the odd sections are settled on and these people are not likely to purchase odd sections for some time.

After completing the work in this district on August 27, we started for township 34, range 6, west of the third meridian, to complete the survey and mounding of that township. The trip as far as Saskatoon was made over the same trail we came up on over two weeks previous. The change in the crops in that short time was remarkable. They bid fair to produce a good yield but were frosted later on. The weather during the growing season was ideal. The damage by frost was not on account of an early autumn, but rather attributable to the very late season. In ordinary seasons grain would have been cut at the time of the most damaging frosts. Wheat sown very late is almost certain to be frosted in any season.

The lines surveyed during the season were nearly all retracements and we ran random lines, being the most practical and expeditious way of carrying on the work. We arrived in township 34, range 6, on August 29. We completed the lines and mounds on the east side of the river, then moved to the west side crossing the river at Saskatoon. On September 12 it snowed to the depth of two inches during the night; this made it disagreeable for a couple of days, after which we had ideal weather.

South Saskatchewan river runs northerly through this township from section 2 to section 33. There is a very wide valley or river flats skirted on the west by a range of hills through the centre of sections 5 to 32, on the east by hills northwesterly from section 1 to 27, and northeasterly through section 35. A large portion of the land in the flats is good farming land, while that on the hills is light sand, fit only for grazing. I completed the survey and mounding of this township on September 18, and started on the following day for township 38, range 13, to make a retracement in that township according to instructions dated July 27.

From township 34 I took the direct trail from Saskatoon to Asquith on the Canadian Pacific railway and northwesterly from there until I struck the old Hudson's Bay company's trail which runs through township 38, range 13.

I finished the retracement on September 24; a sketch and report of the work was sent in later. I started the next day for township 51, range 27. We were in the north part of township 38, range 13, which was pretty rough. I experienced some difficulty in getting west to strike the north trail, the most direct route to Battleford. I passed through Battleford, where I procured some necessary supplies.

After making some inquiry I purposed taking the old Hudson's Bay company's trail to Fort Pitt, the most direct route to the work. At present the trail for a long way out of Battleford is destroyed or fenced in and I had to take a trail leading from one station to another on the Canadian Northern railway until after I had passed Paynton, where I crossed country and got on the Pitt trail which is very little used now. I arrived in township 51, range 27, on September 3.

I went up this trail to the same township in 1884. Apart from settlement the general features of the country have not changed much since that time. Fire has destroyed many bluffs, and while others have grown up they are not so heavy. The most noticeable feature is the change in water areas. In 1884 all sloughs, ponds, lakes and creeks seemed to be at high water mark. These are now much lower and some have entirely disappeared.

In accordance with instructions dated August 8, I made a retracement and restoration survey of the outlines, interior meridians and crosslines of townships 51 and 52, range 27, and of township 53, range 27, with the exception of the west and north outlines, which were retraced by G. J. Lonergan, D.L.S., in 1906.

Township 51 is cut by Big Gully creek. The surface is from rolling to hilly. It has many small sloughs and lakes and numerous bluffs of poplar scattered all over the township. Township 52 is very similar to 51 but not quite so rough. These townships contain a good deal of fair farming land and a number of settlers have taken up



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homesteads and are doing fairly well. This district is not a grain district but rather a mixed farming or cattle country.

A large part of township 53 is rough and hilly. It is cut by Saskatchewan river from section 19 to section 1. All south of the river is hilly and north of the river rolling to hilly. Sloughs and lakes are scattered all over the township with scattered bluffs of poplar south of the river, and large stretches of spruce, tamarack and poplar north.

According to instructions dated September 4, a portion of two lakes, one in section 1, the other in sections 12 and 13, township 52, range 1, west of the fourth meridian were traversed and fractional townships 54, ranges 27 and 28 west of the third meridian subdivided. This survey which completed all our work in this district was finished on November 28.

On the following day I started for Lloydminster. On the way in I made arrangements with Mr. Chas. Hayes, section 20, township 51, range 27 for the storing of the transport goods and the wintering of the horses. On arriving at Lloydminster four of the men wished to go to Edmonton; these I paid off. The other six I took to Saskatoon by rail. Two of them were paid off on arrival.

Instructions dated October 26 were to revisit township 38, range 13, west of the third meridian for further retracements.

The intention was to go by rail to Asquith and hire a rig there for a trip to the township. As the Canadian Pacific railway had not started their train service I hired a first-class team at a low rate from Saskatoon, took three men and a cook with me, made the trip, did the work and returned to Saskatoon on December 8. I paid off the men on the following day.

The weather was exceptionally fine during the season's work (from August 5 to December 9), which took me over a district of 175 miles east and west, 125 miles north and south, in the heart of the fertile belt of northern Saskatchewan. A flurry of snow on September 12 was the only snowfall until December 7. Saskatchewan river did not freeze over for safe crossing until November 25.

Looking back over a period of twenty-five years, it is safe to say we never had a season when stock (especially horses and cattle) would not do well on the open run. On the other hand we have had many failures of grain crops. To raise wheat for market seems to be the all absorbing ambition of the majority of farmers. Large tracts of open plains are well adapted for exclusive grain growing, but this class of farming is more or less an uncertainty as either frost, hail, hot winds or drouth have time and again spoiled the promise of a good harvest. On the other hand stock raising and mixed farming is to a large extent free from these damaging elements, and present a surety of success which exclusive grain raising does not warrant.

I have the honour, &c.,

WM. R. REILLY, D.L.S.



## APPENDIX No. 32.

## REPORT OF GEO. ROSS, D.L.S.

SURVEY OF A PART OF THE FOURTEENTH BASE LINE BETWEEN THE FIFTH AND SIXTH  
MERIDIANS.

WELLAND, ONT., March 6, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit my report on the survey of the fourteenth base line westerly from the east boundary of range 13, west of the fifth meridian, to the sixth meridian.

In accordance with the suggestion made by you in a letter dated January 12, 1907, that it would be advisable for me to make a preliminary trip to Edmonton, in order to arrange for the forwarding of supplies to a suitable depot, towards the western end of the line to be run by me, as they could be freighted much easier and cheaper by sleighs in winter, than by packhorses, over soft trails in summer and in order also to purchase packhorses, as these animals would in all probability be hard to procure during the following spring, I left Welland, on January 31, 1907, for Edmonton. While there I purchased the greater portion of the supplies required by me during the following season, and arranged to have them forwarded to Big Eddy on McLeod river, and I also arranged for the purchase of twenty packhorses. I returned home to Welland on February 25.

On May 27, I again left for Edmonton, and arrived there on the 31st of that month. I organized my party in that city, purchased the balance of my outfit and supplies and took the trail for Lac Ste. Anne on June 10, where we arrived on the evening of the 13th.

From Edmonton to Lac Ste. Anne there is a fair wagon road, and I engaged a freighter to assist us by taking two wagon loads as far as Lac Ste. Anne, from which point we proceeded west with the aid of our packhorses alone, leaving at Lac Ste. Anne, to be forwarded to us, in about ten days, such portion of the outfit and supplies as could not be taken along without overloading the horses.

On the night of June 12 and during the greater portion of June 13 and 14 there was a heavy and steady rain, and the trail was becoming wet and sloppy. About noon on June 15 we left Lac Ste. Anne by the Yellowhead Pass trail and arrived at the crossing of Pembina river on the evening of the 18th, and found it to be in flood and not fordable. I had left the folding canvas boat with which I had been supplied behind at Lac Ste. Anne, but fortunately Mr. A. H. Hawkins, D.L.S., who was on his way out to continue the extension of the thirteenth base line, was camped on the other side of the river and he very kindly placed his boat at our disposal. We were thus enabled to get part of our outfit and supplies across the river that evening and succeeded in getting the balance over by nine o'clock next morning. Having the horses all loaded shortly before noon, we again proceeded west and arrived at the ford on Lobstick river that evening during a heavy rain.

The Yellowhead Pass trail is open as a wagon road from Lac Ste. Anne to a point about two miles beyond the crossing of Lobstick river, near the west side of range 8, and the land traversed by this portion of the trail is mainly high and rolling.



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covered with poplar woods and intermingling stretches of partially open prairie, on which there is a good growth of grass and some scrub. On these open stretches are to be seen the houses and outbuildings of new settlers, and apparently this country will become the home of a thriving and prosperous community at an early date.

On June 20, after the packs were loaded on the horses, we forded the Lobstick, and proceeding westerly about two miles came to the point where the wagon road dwindles down to a mere pack trail or bridle path, winding through the woods, and marked by an occasional blazed tree. About six miles farther on the trail crosses tamarack swamps and stretches of it are very soft and sloppy. A rainstorm began at 4 p.m. and at 5.30 we camped on an open piece of high ground after crossing a swamp, in which there was good pasture for the horses. The next day we remained in camp owing to the heavy steady rain which continued till evening. The following day proved to be very fine and we continued our journey westerly; the trail passes through the southern part of township 53, range 10, west of the fifth meridian, and was in very good condition in spite of the recent rainy weather; the country traversed was wooded with poplar or mixed poplar and spruce. Several small creeks were crossed where care had to be taken in order to prevent the pack horses from getting mired.

In range 11 the trail was in good condition except about two miles near the west side of the range. In range 12, which we crossed on June 25, the trail winds through woods of spruce and poplar mixed with jackpine and *brulé*, and about thirty per cent of it is through soft, boggy, swampy lands. In this range also several creeks were crossed, some of which were quite miry.

On June 26 I commenced work by retracing the north boundary of section 31, township 52, range 12, and began the extension of the fourteenth base line across range 13, by turning off the line from the north boundary of section 31. It was cloudy in the evening and I was unable to take an observation for azimuth, and next day continued the production of the line, till a heavy rain set in early in the afternoon. During June 28, 29 and 30 this rain continued with but little interruption and caused abnormally high water in the creeks and streams.

On July 1 we were able to proceed with the production of the base line along the north boundary of township 52, range 13, and on the evening of July 2 I obtained my first observation on Polaris. Next day we corrected the portion of the line previously run and continued it on its true bearing.

Yellowhead Pass trail runs through range 13, about three-quarters of a mile north of the fourteenth base line and we were able to camp along this trail and avoid the necessity of cutting a trail for our own use. Although the country about half a mile north of our own line was fairly light *brulé*, the line had to be opened through comparatively heavy woods and consequently our progress was rather slow, but we reached Carrot creek near the west side of range 13 on July 9, the camp having been moved along the trail to this creek the previous day. On the evening of the 9th a pack train came in with a load of the supplies we had left behind at Lac Ste. Anne, and also brought up our folding canvas boat, which the packer in charge of the train found to be of the greatest value in crossing Pembina river and some of the larger creeks which were very much swollen by the recent heavy rains and were not fordable.

On July 12 one of my men, while carrying an axe, spade and mattock, slipped off a log and fell on the point of the mattock, which penetrated his back above the hip and rendered him unable to resume work on the line for about six weeks. Being thus short-handed, and the line continuing in heavy timber, I was unable to attend to the work of exploring the country, as required by my instructions.

In ranges 13 and 14 and the east half of range 15, a distance of fifteen miles, we did not run across a swamp of any size, and the first one met with was on July 24, when the line entered a tamarack swamp, occupying the southwest part of section 4 and the southeast part of section 5, township 53, range 15. On the following day



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the line crossed the Yellowhead Pass trail, and for the first time entered comparatively open *brulé*. Intermingled with the *brulé* were areas of low wooded land with medium sized spruce, together with many spruce and tamarack swamps.

We reached Wolfe creek with our line and moved camp there, on July 25, finding in the valley of that creek, along the trail a fine open hay meadow dotted in places with patches of scrub and groves of poplar. The pasture found in the valley of Wolfe creek, was superior to any we had yet come across, since leaving Lac Ste. Anne, although we had found fairly good feed for the horses at all our camping grounds along the trail. In the comparatively open *brulé* we found a crop of fine large strawberries.

On August 2 we reached Moose creek, in the eastern part of range 17, with our line, the camp having been moved there on July 30. By the end of July we had completed in all twenty-two miles of the base line, the greater part of which was opened through heavy timber.

During the months of June and July, a great amount of rain had fallen and the trail was almost in an impassable condition, however it was not till the latter part of July that our supplies needed replenishing, when we had no difficulties in bringing in all we required, from our depot at Big Eddy, which proved to be very centrally located.

Between Wolfe creek and Moose creek our line ran through a great many swamps, but the trail kept mainly along the ridges or higher lands, though in passing from one ridge to another, many low swampy and boggy places were crossed by it. The worst of these boggy places on the trail have been corduroyed but the greater portion of the corduroy is now in a bad state of repair.

Our first crossing of McLeod river with the line was made at the northeast corner of section 34, township 52, range 17, west of the fifth meridian on August 3, and camp was moved over on the 5th when the horses loaded with their usual packs were able to ford the river in safety. We reached the second crossing of McLeod river with the line in section 35, township 52, range 18 on August 8, and that day our camp was moved to Big Eddy, where our supplies had been stored the previous winter with Mr. B. Berthoux, the general merchant there. A short distance east of Big Eddy Mr. A. Sinclair, a squatter, had erected a good loghouse and barn in the flats on the north side of McLeod river, and had also a very fine garden.

We continued our line and on August 13 moved camp from Big Eddy about three miles up Sundance creek, still using the Yellowhead Pass trail. On the 15th camp was moved to the crossing at Sundance creek, where there was good pasture for the horses and on the following day we continued our line and also moved camp to Whitemud, where there is a good open hay meadow and a fine stream of pure water.

During the night of August 16 there was a heavy downpour of rain and the following day we were detained in camp by a steady fall of wet snow, sometimes turning to rain, which continued till about ten o'clock in the forenoon of the 18th; however, the snow melted as it fell and after the storm was over the weather turned fine and bright. Previous to this storm the rainfall had been rather excessive but now the weather turned drier.

At Whitemud we were again in the valley of McLeod river, but from this place to Big Eddy the river makes a big loop to the south, away from the base line, while west of Whitemud to The Leavings, a distance of ten or twelve miles, the river runs nearly parallel with and only a short distance south of the base line.

We moved camp to The Leavings on August 30 and on the following day completed the survey of the base line to the west side of range 21, a distance of fifty-four miles in all, our record for August being 32 miles.

At The Leavings there is a fine open hay meadow about forty chains long and thirty chains wide, where we found excellent feed for our horses. At this place the Yellowhead Pass trail leaves the valley of McLeod river and continues westerly to Athabaska river, approaching it at Sandstone creek, while another loop of this trail



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turns northwesterly from The Leavings and crosses to the north side of the base line about the centre of range 22 and after continuing northwesterly for some distance turns southwesterly and crosses the base line about the centre of the north boundary of section 34, township 52, range 23, and in our survey of the base line from the east boundary of range 13 we were able to use the old trail and camp alongside of it without the necessity of making any new trails till we crossed it for the last time near the centre of range 23.

On September 2, we moved camp from The Leavings by the northerly loop of the trail to a point on the high ridge or divide between McLeod and Athabaska rivers, which was about half a mile south of the base line. On this divide, feed for the horses is so scarce, that they had to be taken back and pastured at The Leavings.

About 10 o'clock on the night of September 9 a heavy snow storm set in, and continued till the morning of the 11th, when the ground was covered with snow to a depth of five inches. The weather continued cold during the 11th and the snow did not begin to thaw until the afternoon of the 12th. During the 13th there was a drizzling rain the greater part of the day, and on the 14th, 15th and forenoon of the 16th there was a continuous storm of wet snow. After this storm the weather turned milder and in two or three days the snow was all gone and the temperature ranged about sixty degrees Fahrenheit through the day until the middle of October, during which time no rain fell except for one-half day.

We left Yellowhead Pass trail, after crossing it for the last time with the base line about a mile and a quarter east of Athabaska river, and from this point it was necessary for us to make a new trail for our own use, while we continued westerly in the vicinity of the base line until we struck the Smoky river trail in the westerly part of range 26.

On September 23 we moved camp across Athabaska river. Here our folding canvas boat proved to be most useful, as by its aid, we were able to move our outfit and the supplies we had on hand across the river, in a very short time. Before swimming the horses across, I had the packer bring up the balance of the supplies from our depot at Big Eddy, except a small quantity left for our return journey. For the safe keeping of our supplies and outfit, that were not required for immediate use, I had a log hut or storehouse built on the westerly side of the river, and in order to take care of some additional supplies which would be required during the latter part of the season, together with oats for the horses, I had also a small log house or shack built on the easterly side of the river, so that the goods could be placed in this storehouse and left in safety, at any time, by anyone bringing them up. I had previously ordered the supplies likely to be required and oats for the horses, and had given instructions that they should be forwarded from Lac Ste. Anne, as early as possible. Owing to unusual frosts, the oat crop was a partial failure and slow to ripen, thus delaying the threshing season, and it was therefore very late in the fall before a supply of oats could be secured and forwarded. Owing to the late date at which oats could be obtained and shipped, the charges for freighting them up by pack-train, were much higher than they would have been earlier in the season. To avoid the extra charge for packing, I asked that old oats be obtained and forwarded but it was found impossible to secure old oats as they were being saved for seed, because the germinating power of last season's crop had been injured by frost.

In continuing our line westerly from Athabaska river it was necessary to take with us supplies for about ten days or two weeks only, as the packer could readily make a trip back to our storehouse on the westerly side of the river when further supplies were required, and while there he could, with the aid of our canvas boat, easily cross the river to look after any supplies or mail that might have been brought up and left at the cache on the easterly side.

On the westerly side of the river, in the vicinity of the base line, there was, fortunately, a large area on which we found fine feed for the horses. We still had the



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original number of horses with which we had set out from Edmonton, nearly all of them being in very fine condition.

On the high ridge or divide between McLeod and Athabaska rivers our line had to be opened out through several miles of heavy spruce and jackpine woods, and also through *brulé* with dry standing spruce and jackpine trees from six to twenty-two inches in diameter. Through this our progress was rather slow, but after crossing the Athabaska the land was more open, mainly light *brulé* with second growth poplar and small scattered areas of spruce, through which the line was opened out quite rapidly. After getting over about seven miles of this comparatively open country, we again ran into a stretch of very heavy woodland on the high plateau in range 25, and the western part of range 24, making our progress again rather slow.

On November 11 we completed all work to be done as far as the easterly side of Whitefish lake, which is crossed by the base line in the westerly part of range 26. On the following day we moved camp to the west side of the lake.

The easterly bank of the valley of Whitefish lake rises to the height of about a thousand feet above it, and along this bank is a cliff formed by an outcrop of sandstone, about one hundred and twenty-five feet high. It was necessary for us to make a detour around the south end of this lake in order to reach the Smoky river trail, which runs northwesterly from Prairie creek to Smoky river and passes along the southerly end of the westerly side of Whitefish lake. We struck this trail where it crosses the creek running northerly into the southerly end of this lake, being at a point about two miles south of the lake. We were then able to proceed northerly by the Smoky river trail to the point where it turned northwesterly away from the lake and thence northerly by an old trail running near the westerly side of the lake, to a point a short distance north of the base line, where we found a good camping ground by the lake and close to a good hay meadow in which there was splendid feed for the horses.

When I got around to the west side of the lake, I had the pleasure of meeting Mr. A. Saint Cyr, D.L.S., who was engaged on the survey of the sixth meridian as far south as the fourteenth base. It was his intention to run south from this base line along the east boundary of range 27 instead of producing the sixth meridian farther.

On November 13, we continued our line west from Whitefish lake. The distance across this lake not having been previously measured, the chainmen were now able to measure it on the ice, the lake being covered (except the deep central portion of it south of the line) by a sheet of perfectly smooth and clear ice, somewhat over an inch in thickness. Great numbers of whitefish, jackfish, etc., could be seen swimming around in the water beneath the ice.

West of the lake the country was comparatively open for the distance of about a mile; then our line entered a thick wood of small sized spruce, through which it passed for the further distance of about a mile, and entered a *brulé*, which with a few scattered areas of spruce and jackpine, extended to the sixth meridian. About two miles east of the sixth meridian we crossed Hay river, a beautiful stream of pure water, about fifty or sixty feet wide and from two to five feet deep, running northeasterly, in a wide and deep valley, in which there are some good hay flats with excellent pasture.

From the westerly side of Whitefish lake we moved camp on November 18, to Hay river, going round by Smoky river trail. At this time the ground was free from snow, none having fallen since September 16, but the morning after camp was moved to Hay river, about three and a half inches of snow fell between 7 and 9 o'clock, and in the forenoon of November 22 there was a further fall of snow.

In McLeod and Athabaska rivers there are great numbers of jackfish, graylings, whitefish and a large species of trout. In Hay river, in range 27, there are great



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quantities of bull trout and Carrot creek in range 13 is teeming with speckled trout. Whitefish lake in range 26 abounds with whitefish, jackfish, trout, &c.

In Whitefish lake there are also several families of beaver as can be readily seen by the large amount of poplar freshly cut by them.

Considerable numbers of bear, moose, and black-tailed deer are to be found in the above-named townships, and there are also a few wolves, foxes, mink, weasel, &c.

Ruffed grouse, or partridge are quite plentiful and a few prairie chicken were occasionally seen.

The climate is very similar to that of Edmonton. The rainfall is abundant, and grain growing and gardening can apparently be carried on without injury from summer frosts. High or cold winds rarely prevail, and last season, when the wind attained any considerable velocity it appeared to be a warm chinook.

We completed the survey of the base line to the sixth meridian on November 26, and as it was so late in the season I decided to return home instead of going north to begin the work of extending the fifteenth base line, west from its present terminus in range 20, west of the fifth meridian.

I began my return journey on the morning of November 27, and proceeding by the Smoky river trail I arrived with my party and outfit on the northwesterly side of Athabaska river, opposite Prairie creek, in the evening of the following day, and next day by the aid of a raft left there for my use by Mr. A. Saint Cyr, D.L.S., I crossed my outfit and supplies to the southeasterly side of the river. The river had begun to freeze over, the ice extending out from the sides with an open channel in the centre and a good deal of drift ice running, so that I was unable to get my horses across, either on November 29 or 30. However, on the evening of the 30th the weather turned milder and a considerable amount of rain fell during the night. Next morning I found the ice had loosened from the sides of the river and floated down, while about a mile above Prairie creek there was an ice bridge which held back the drift ice from beyond. Taking advantage of this opportunity, I swam my horses across the river, at Prairie creek in safety on December 1 and the following day with my party took the Yellowhead Pass trail for Lac Ste. Anne.

When at Prairie creek I engaged Isidore Findlay to assist me with twelve pack horses, while returning to Lac Ste. Anne, in order that I might be able to get over the trail more rapidly than I otherwise could and thus avoid the necessity of making double trips. He was to join me at my cache on the Athabaska river at the fourteenth base line when I stopped to secure supplies, oats for the horses, &c., stored there for my return journey. I secured these supplies on December 4, but Mr. Findlay did not overtake me till some days after, and we arrived at Lac Ste. Anne on the evening of December 20.

I started out from Edmonton on June 10 with twenty pack horses, and fortunately, after a season's hard and faithful service, I was able to take them back to Lac Ste. Anne fit for work, strong, and in good condition, and in justice to my packer, Mr. Thomas J. Thompson, I must add that he deserves a large amount of credit for his faithful services and untiring exertions in always looking after the horses, day or night, in seeing that they got the best possible pasture and did not stray away. By his care in loading and packing the animals, they were kept free from the usual trouble of sore backs, and he was able to look after them, and have them on hand when required, without using hobbles, or tethering ropes.

On December 21, I completed arrangements with Mr. Gunn, chief officer of the Hudson's Bay company at Lac Ste. Anne, to store the outfit and winter the horses belonging to my party and in company with Mr. A. Saint Cyr, D.L.S., who was also returning with his party, engaged teams to take both parties to Edmonton, where we arrived on the evening of December 23.



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At Edmonton I paid off the men belonging to my party and after closing up all business requiring my attention there, I returned home to Welland, Ont., arriving there on December 31, 1907.

I have the honour to be, sir,  
Your obedient servant,

GEO. ROSS, *D.L.S.*



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## APPENDIX No. 33.

## REPORT OF JOS. E. ROSS, D.L.S.

SURVEYS IN THE RAILWAY BELT, KAMLOOPS DISTRICT, BRITISH COLUMBIA.

KAMLOOPS, B.C., February 24, 1908.

E. DEVILLE, LL.D.,  
Surveyor General,  
Ottawa.

Sir,—In accordance with instructions I beg to submit the following report on my survey operations in the railway belt in British Columbia during the season of 1907:—

Having instructions to make a traverse of Columbia river from a point on the Canadian Pacific railway to the north limit of the railway belt at the most suitable time during the winter, I proceeded to this work on January 17 before completing my returns of the previous season. On arriving at Beavermouth, the starting point, I found that, although there had been extremely cold weather, the river was partly open and the ice weak in places, and that there was considerable slush. The conditions indeed were not nearly so favourable as I had anticipated. There were frequent heavy snowfalls and this, together with the slush, not only made travelling difficult but also prevented us from moving our outfit on sleds or toboggans. We were compelled to resort to the primitive way of packing on our backs. In consequence some of the party quit in disgust. However, I secured more men without much trouble and continued the work. For several weeks our progress was slow, but on February 6 a slight thaw set in, the snow settled, and, on again freezing, a crust formed which made travelling good and allowed us to walk on the weakest ice. From this until March 10, when I finished the work, the conditions could not have been more favourable. Although the main object was to define the limit of the belt line I also planted witness corners at the intersections of all the east and west section lines with the river, which corners, in case of future surveys anywhere along the river, can be used as starting points.

While the Columbia is winding and in places loops and islands have been formed as well as numerous back channels, the general direction is nearly northwest. At the railway the river averages five chains in width, but it gradually widens until at the head of Surprise rapids, near the boundary, it is about a quarter of a mile wide. The channel is navigable, having a depth of from six to ten feet. As the river forms the boundary between the Rockies and the Selkirks it is needless to say that the country is generally mountainous. There are several large flats along the river, one below the mouth of Beaver river and the others at the mouths of Gold and Bush creeks, which flow into the Columbia from opposite sides. So far as seen the middle of the flats is marshy. The timber is mostly spruce of from ten to twenty inches in diameter. On the high land the timber is fir. From the indications I would say that a considerable part of the low land is flooded in the spring and during high water in the river. There is suitable land here for a few settlers, but I do not think there is any prospect of agricultural development until conditions become more favourable in regard to transportation facilities. Possibly as timbering operations proceed and in consequence roads are made and the timber partially cleared off all the available land will be taken up.



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On returning to Kamloops I finished all my returns of surveys to date, and on May 10 I commenced the general work of the season. In Salmon river and Spillimacheen valleys, which are the most important centres of the district, small surveys had been accumulating for the last four years so I decided to confine my operations to these parts until the work was entirely completed. This occupied the greater part of the season. The greater portion of the farming land has been surveyed and taken up, but extensions are continually being made on the hills and outlying parts. In Salmon river valley the surveys were small and scattered and were at elevations of from a few hundred to four thousand feet. While the soil is fairly good the declivities and broken surface of the country render much of it unfit for anything in the nature of farming except stock raising. The first land of any extent suitable for settlement I found in township 17, range 10, west of the sixth meridian, situated on a low mountain about five miles long by three miles in width and at an elevation of from five hundred to fifteen hundred feet above the surrounding valley. A part of the westerly side has been taken up by an Indian reserve and provincial lots. The top is thickly wooded with a rolling surface but the sides are mostly open with a steep slope. There is considerable arable land with fairly good soil, but the water is alkaline and scarce. There is a wagon road built by one of the settlers to the main road from the town of Armstrong, situated about four miles to the east on the Shuswap and Okanagan railway.

In township 18, range 9, at an elevation of three hundred to four hundred feet above the main valley there is some land suitable for settlement. It has good water and the timber has been mostly all burnt off. There is at present a thick growth of brush. A good road leads to the town of Enderby three miles distant. Both this township and the one previously mentioned had been partly surveyed and I completed the surveys. There are also a few sections of fairly good land in township 19 of this range. Here the surface is rolling, the soil rather light but the water is good. This land lies about midway between Salmon Arm and Enderby. The main road connecting these places runs through the middle of the survey. I completed the survey of the easterly half of this township.

I next made some surveys along Shuswap river, consisting mainly of river traverse. The sections had been mostly run out on a former survey to establish the belt boundary at Mabel lake. Some four or five squatters have gone in here recently. Besides completing the surveys needed for them I surveyed all the land that would likely be taken up. The only land that appears suitable for settlement is in the quarter sections along the river, as farther back the land is hilly and heavily timbered. There is not sufficient timber on the lands squatted on to warrant it being included in a timber berth. The greatest drawback to settlement has been the want of a good road. We had to cut our way around the worst places. The lumber companies operating on Mabel lake had been hauling in supplies for several months and in consequence the road had been cut up in the worst possible way. The provincial Government has expended about \$5,000.00 a year on this road for the last two years. Another season's work at the same rate should put it in good condition.

The rest of the surveys were small and scattered. At 'Grande prairie' I spent several weeks making retracements and connections with provincial lots. As I was on the point of closing for the season I received instructions from you to make a number of connections between my last year's surveys and those of 1886 and 1887. I was engaged on a partial survey of these until the end of the year when I closed field operations.

As to minerals I may say that the country covered by me has been well prospected as is shown by the numerous location posts and prospect holes found nearly everywhere. So far the prospects are not very promising. The only mineral in quantity noticed was a deposit of gypsum in township 18, range 12, west of the sixth meridian.



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Surveying the railway belt differs in some respects from the ordinary sub-division work. The country is more mountainous and broken. This is especially the case where the limit of the belt has to be defined. The sectional work is gradually becoming rougher since the main body of the agricultural lands is already surveyed. The lines have to be carried over ridges to the smaller valleys. The surveyor now is usually obliged to begin where the first surveyor considered it advisable to leave off. The starting point is often in some out of the way place at which it is inconvenient to take observations for azimuth or perhaps it is a witness corner put in at the foot of a steep rocky bluff. The extent of country covered is great, usually extending from one hundred to two hundred miles along the railway and involving work in as many as thirty townships. Much time is also taken up in making connections with Indian reserves and provincial lots as well as retracements and closing of Dominion section lines. While making these connections especially when in open country, the chief is by far the hardest worked man on the party.

If complete surveys of the best agricultural townships had been made at the outset it would have proved much more economical and satisfactory but this of course could not be foreseen. This plan could not now be adopted without putting on a large force of surveyors otherwise the work would fall behind and urgent cases could not receive attention. Your present plan of having a township, or part of one, completed when it does not entail much extra labour is a move in the right direction and possibly the best that can be done under the circumstances.

It will be seen from what has already been stated that the railway belt cannot accomodate any large influx of immigrants. The land seeker here, at present, needs to be to some extent a prospector also. If the land lies on a bench he must use his judgment and experience as to what crops can be grown successfully without irrigating; possibly he may have to locate a road, and this also requires experience as quite often a roundabout way has to be taken to obtain a suitable grade; sometimes a switchback or loop has to be put in the road. If the land needs to be irrigated it will be necessary to investigate as to whether water can be obtained from a stream by damming or putting in a reservoir.

As the bulk of the farming lands in this district have been surveyed for some years it was generally expected that the survey list would soon reach the vanishing point. This however does not appear to be the case. On the contrary the list of surveys needed is yearly growing larger. Lands that were once considered unfit for farming are now eagerly sought after and people are gradually settling in the more remote isolated parts. Much depends on irrigation. The provincial government have had this matter under consideration and it is expected that legislation will soon be passed which will have a beneficial effect on all future irrigation works. The climate is perhaps one of the greatest inducements to settlement in this district.

The setback in business which prevailed throughout the country during the latter part of the year was marked by the closing down of the lumber camps and a few of the mines, causing many labourers to be thrown out of work with a consequent fall in wages. It is expected that this will be only temporary and that the usual industrial activity will be resumed in the spring.

A descriptive account of the land in the townships surveyed is attached hereto. My assistant, Mr. Geo. H. McCallum gave complete satisfaction.

I have the honour to be, Sir,  
Your obedient servant,

JOS. E. ROSS, D.L.S.



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## APPENDIX No. 34.

## REPORT OF A. SAINT-CYR, D.L.S.

SURVEY OF THE SIXTH MERIDIAN BETWEEN THE THIRTEENTH AND SIXTEENTH BASE LINES.

OTTAWA, February 17, 1908

E. DEVILLE, Esq. LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to transmit to you the general report on my surveys during the past season.

These consist of the survey of the sixth initial meridian in a continuous line from the sixteenth base line as far south as the northeast corner of township 52, and also in locating its position beyond the Bullrush mountains which rise over 8,000 feet above sea level.

This last work was accomplished by surveying from the fourteenth base line the east outlines of township 52 and 51, range 27, west of the fifth meridian. Then from the temporary post left at the southeast corner of township 51, a traverse survey of eighteen miles was made around the eastern slope of the above mentioned mountains in order to define the position of the sixth meridian. This having been determined by calculations, the south half of the east boundary of section 1, township 49, range 1, west of the sixth meridian was surveyed south to the northeast corner of township 48. Here I planted an iron post and built a mound. This monument falls near the foot of the mountains west of Athabaska river and the pack trail between Jasper House and Big Smoky river crosses the line on which it is erected. As this line was well opened and blazed it will be an easy matter at any time to find this monument should it be required for future surveys.

On receipt of your instructions I immediately set about completing the returns of my previous season's surveys in the Peace river country from which I had just returned, and when it was convenient I attended to the final arrangements of the coming survey such as making inquiries for a few more pack-animals to be delivered to me at Edmonton, ordering a new camp outfit and having more supplies forwarded to Sturgeon lake which was to be my base of supplies for the first part of my work. I had previously been informed in Edmonton that some packers going to 'big eddy' on McLeod river had just returned to Lake St. Anne without reaching their destination, owing to the deep snow and scanty feed along the trail usually followed by the pack-trains, and that no one would undertake to freight in that direction till conditions should have improved. As a matter of fact part of my supplies which had been brought as far west as Lake Ste. Ann in February, were not delivered at 'Jocks house,' on Prairie creek, till the end of August. But in that district the conditions were such during the early summer that I presume such delays in transportation could not have been entirely avoided. On the strength of the information received in Edmonton, I decided to reach the country where my surveys were by way of Lesser Slave lake and East Prairie river settlement, where my pack outfit was stored and where the ponies which I was to use again on my present work had wintered. On March 28, I left Ottawa for Edmonton where I arrived five days later. Some time was spent here in hiring men and in trying to enlist the services of freighters willing to transport my party and outfit to Lesser Slave lake. This proved to be a



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difficult task at the time because daily reports were being circulated in town by incoming freighters from the lake, that the ice had already broken over the rapids of Athabaska river. Finally through the untiring efforts of Messrs. Revillon Bros., Mr. Remi Baert and his brother consented to undertake the journey and finally signed the contract, having beforehand provided against loss by possible accident by insuring their horses for the trip.

On April 7 my party and the freighters left for the north with three heavily loaded sleds. In the meantime the ponies ordered had arrived. The pack-saddles etc., needed for these horses were soon ready, and on April 10 I started on my journey overtaking my party at Short's stopping place.

Near St. Emile, where there is a homestead, the freighters found it impossible to travel any farther with sleds and had therefore transferred the loads to wagons, continuing their journey with an extra team of horses and an extra wagon loaded with three sets of sleds which would have to be used again between Athabaska Landing and Stony point, at the head of Lesser Slave lake.

On April 12 we arrived at the Landing. The state of the ice on the Athabaska was far from inviting; so every precaution that experience could suggest was taken and two days later we reached without any serious mishap 'Dumont's place,' at the mouth of Lesser Slave river. Here were camped a party of colonists who were prevented for the present from proceeding any farther, on account of the unsafe condition of the ice on the river. They advised us not to attempt to travel any farther on the ice, greatly weakened by recent rains, so we took again the overland route cut by Mr. Selby's party and mine three years ago. As this road passes through the woods there was still at the time enough snow left on the ground to permit the use of the sleds.

On April 17 we camped at the foot of Lesser Slave lake. One of my freighters who had not been well for some time became very sick, and wished to return home. However, I persuaded his brother that it would be preferable for all concerned to use all possible diligence to reach the end of the lake where the invalid would have the services of Dr. West of the Royal Northwest Mounted Police and those of the Roman Catholic mission. So we left the next morning and three days later camped at Stony point, Mr. Baert, being removed to the hospital where for several weeks he was very ill with typhoid fever.

At Stony point I found the narrows between Buffalo lake and Lesser Slave lake only partly free of ice and though the water is shallow at this point still the bottom of the lake is such as to make it dangerous if not impossible to cross with heavily loaded wagons. So I decided to go by way of the English mission, a rather long detour, but the only practicable road then.

We left Stony point on April 26, and reached 'Jobin's place' the same night. The next day we had to ford South Heart river which took considerable time as the water was very high. The scow which in previous years had done service as a ferry had been carried away by ice a short time before, so that in order to prevent our baggage or supplies from getting wet or spoiled they had to be placed on the top of the wagon boxes out of the reach of the water. This necessitated many trips across this stream.

The next day we reached Frank Mirault's ranch. Here I was able to hire two more freighters with their teams to carry to Sturgeon lake my supplies, outfit and also grain for my pack ponies.

The difficulties incidental to the trip between Edmonton and the head of Lesser Slave lake recur every spring. To travel this distance with any degree of certainty one must always provide two modes of transportation, i.e. he must have in his train both sleds and wagons to be interchanged as occasion requires it. These drawbacks may partly disappear in the future as the country becomes better settled, when casual help may possibly be obtained from the people living on the road. I have noticed



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already quite an improvement in some matters along this route, stopping places, such as they are, have been built and more are being erected at convenient intermediate points along the rivers, while in my previous travels over this northern country the top of the loads afforded us the only resting place for the night.

Another source of inconvenience was that three years ago no horse-feed of any description could be had along this route; consequently extra teams had to haul sufficient bales of hay to last also for the return trip, a total distance of 300 miles. Now, hay can be procured at nearly all the stopping places.

In regard to oats, it is still cheaper to carry a supply. If this is not done one may be compelled to buy them at Lesser Slave lake where they cost one dollar per bushel. I have myself often had to give one dollar and fifty cents per bushel for oats and even pay this exorbitant price for large quantities.

The treacherous condition of the ice on Lesser Slave river is a constant and unavoidable source of danger. Besides twenty miles of bad rapids there are spots, such as, at the confluence of Sauteux river and Slave river, where the ice even during the coldest weather is honeycombed by air holes. Every winter valuable teams of horses are drowned and whole loads of supplies which cannot be duplicated are lost to the traders. Such mishaps occur too often and could only be prevented by the opening of an overland route between Athabaska landing and the head of Lesser Slave lake, one hundred and fifty miles apart.

On April 30, Mr. O. D. Hill delivered to me the government horses (16) and the pack outfit which I had left in his care two months before and I started for Sturgeon lake trading post on the winter road which passes by Snipe lake. On May 3 we came to Little Smoky river which had to be crossed on rafts; we continued our journey towards Sturgeon lake where we arrived on May 8. Here the freighters were paid off and preparations begun for our next trip to the starting point of my surveys.

At Sturgeon lake trading post I was surprised to see the lake still frozen over and no signs of spring yet perceptible. None of the bustle always attending at this season the exchange of furs for the commodities required by the native trappers could be noticed at the fort, and I was told that owing to the severest winter ever experienced in this district the natives were unable to return for the trading season and the Hudson's Bay company people were preparing to send them relief. The fall of snow had been so great that all their ponies perished, the little feed which they obtained during the winter months by pawing through the snow down to the grass being insufficient to keep them alive.

One Indian, who had worked for me when I was surveying in that district during the winter 1904-5, had just returned to the post from his winter hunt by following the trail which I intended to take in going to my work. He informed me that Simonette river and Moose river had overflowed their banks and that in the forest the snow was still in many places several feet deep and that feed along the trail was scanty and poor as no new grass had yet started to grow. So I decided to hold my band of horses a little longer at the lake wishing for heavy rains, the only thing that would draw the frost from the ground and start vegetation.

On May 13 we left the post and pitched our camp near a creek one mile and a half south of the eighteenth base line. The next day we started to move camp but we had not travelled very far in the forest before we got into the deep snow and had to return to our last camp. The packers with part of the horses were then sent back to Sturgeon lake with orders to bring camp supplies and some of the men's baggage which could not be carried on our previous trip. During the following days it rained continuously.

When the weather was settled again we resumed our journey and on May 21 camped on the right bank of Simonette river which two days later we had to cross on rafts loaded with our effects, whilst the horses swam across.



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At this point there is a ford which I had often used in previous years but which could not be utilized now that the river swollen by the recent heavy rains and the melting snow in the hills had become a raging torrent which would have swept our loaded ponies off their feet.

Beyond the Simonette our progress was often checked by bad roads blocked by fallen timber and in the many days which elapsed before we came to the last crossing of the river at the north boundary of township 61, delays were constantly occurring at the crossings of overflowing creeks which had to be bridged over, and at the passages of extensive swamps which had to be corduroyed. Add to this frequent rains followed by snowstorms and a pretty good idea can be formed of the unfavourable conditions under which we had to travel. The whole country is very hilly and in many places the land is also covered with dead trees lying in every direction and piled up several feet high. There are also large tracts covered with thick willow or scrubby young pine.

On June 13 we arrived at the last crossing of Simonette river, which was forded without difficulty though the current is very swift at this spot, and we camped on a low point at the confluence of the river with one of its southern tributaries.

On June 27 I reached the northeast corner of township 60, range 1, west of the sixth meridian which was the initial point of my surveys. The position of the monument to mark that corner having been established according to your instructions, I proceeded south with my surveys.

GENERAL DESCRIPTION OF THE COUNTRY ADJOINING THE SIXTH MERIDIAN, FROM THE NORTHEAST CORNER OF TOWNSHIP 60, TO THE NORTHEAST CORNER OF TOWNSHIP 52.

Beginning at the northeast corner of township 60, the sixth meridian runs south one mile through spruce and pine woods. In section 25 it enters an extensive tract of *brulé*, at the present time thickly covered with deadfall. This land is poor and deeply cut up by the valleys of tributaries to Simonette river. By a gradual ascent the line rises in section 13 to 4,450 feet where it crosses the watershed between Simonette river to the north, and Little Smoky river to the south. The divide here consists of several ranges of hills and nearly parallel to the north boundary of township 59. The ramifications of the outer ranges extend far into the township south of this line and in the intervening depressions are many spruce swamps, muskegs and lakes. One of these lakes, over one mile long and one-third mile wide crosses the line at the northeast corner of section 1. Those found on the northern slope of these hills drain towards the Simonette, whilst the streams which rise on the opposite slope empty into Little Smoky river which flows from west to east through the middle of township 59.

These hills whose tops and northern slopes are timbered mostly with jackpine extend far to the west where they appear to connect with the foothills of the Rocky mountains.

From the divide, (altitude 4,450 feet) one gets a comprehensive view of the general direction of the valley of Little Smoky river and of the intricate windings of this stream so that the course of the river can be traced to the foothills. There it bifurcates and seems to emerge from two principal gaps, the widest one coming from a southwesterly direction.

A southern tributary joins also the Little Smoky at half a mile west of the corner of section 13, where the river leaves township 59.

At its crossings (altitude 3,925 feet) on the line, the river is a chain and a half wide and flows at the rate of three or four miles an hour over a stony bottom. At the time of survey (July) this stream was easily forded with horses.

The valley of the Little Smoky is three and one-half miles wide between the edges of the hills which bound it on its north and south sides and is 350 feet deep. Except the narrow belt of merchantable timber above mentioned as contiguous to the



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river, the forest which years ago covered the bottom land in this valley and the slopes of the hills on either sides has been overrun by fires and the road which followed at some distance the left bank of the Little Smoky is so obstructed by fallen timber as to be impracticable for travel. Some Indians from Sturgeon lake informed me that this road led to the headwaters of the Little Smoky and that from that point one could cross the divide and reach Big Smoky river in half a day.

A lake surrounded by hay meadows which cover part of sections 26 and 27 drains into Little Smoky river. It lies in a secondary valley parallel to that of the river from which it is separated by low gravel ridges. Between the river and the hills which rise south of it some prairie land with good soil was noticed along the right bank of the river through township 51, range 1.

With this exception the rest of this township is hilly and the soil in the northern half is a clay mixed with gravel and stones; in the southern half, the surface soil is clay mixed with sand and it overlies a subsoil of gravel.

Little Smoky river does not take its rise in the Rocky mountains but judging from the dark brownish color of its water it must head from swamps and lakes in the hills at the divide of Big Smoky river.

Continuing southwards along the east boundary of township 58 we passed through a rolling country where the soil is sand mixed with clay and which supports a second growth of small poplar and jackpine. Gravel ridges separated by large spruce swamps recur constantly.

In the middle of section 13 the line crosses a large creek, the last of several unimportant ones all flowing northeasterly towards Little Smoky river. Along each side of this creek runs an Indian pack trail. Half a mile farther, after crossing a low divide we came to a northern branch of Baptiste river which flows in the next important valley intersected by the sixth meridian.

The aspect of the country remains unchanged in township 57, whose principal feature is Baptiste river, a swift flowing stream which must take its rise in glaciers in the Rocky mountains. Its origin is easily inferred from the greenish appearance of the water so different in colour from that of all the streams met so far.

At the northeast corner of section 12, where it intersects the line, Baptiste river is forty-five yards wide. At about one mile east of that point it receives from the north an important tributary, the same in fact which crosses the line at the northeast corner of section 1, township 58. Small patches of prairie land are found near their confluence. Where the sixth meridian intersects the river its banks are low and wooded. Along the left bank the wooded flat extends half a mile back to a sandstone bluff one hundred feet high. On this flat grow spruce trees six to eighteen inches in diameter. On the opposite side the sandstone ledges, though not more than sixty-five feet high, drop abruptly to the water's edge. Thus through this sandstone bed the river has cut a valley half a mile wide where rocky bluffs and wooded flats alternate along its course. Baptiste river is an important tributary of Athabaska river and has always been recognized by the natives as the territorial division between the northern tribes inhabiting the Sturgeon lake country and those living in the vicinity of Jasper House near the foot of the Rockies.

In the centre of section 36 runs a belt, one-half mile wide, of balsam fir and spruce six to thirty inches in diameter and at different places in this township are patches of green timber of small size. The soil is sand mixed with clay; the subsoil, clay and gravel. South of Baptiste river the soil is a coarse yellow sand so thinly distributed on the top of the sandstone ledges that it made it difficult at certain corners to drive in the iron post to the proper depth. A creek flowing through some prairie land crosses this line a quarter of a mile north of the corner of township 56. It flows northeasterly towards Baptiste river.

From the northeast corner of section 36, township 56, the sixth meridian ascends gradually to the summit (4,400 feet) of wooded hills which cover the southern half of this township and cross the line at the north boundary of section 1. Here also stands



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another range resembling a terrace or table-land wooded with jackpine and for six miles, bearing a little east of north. This table-land bounds on the east the valley of a stream which rises in a large muskeg covering the north half of section 12. This creek flows between high cutbanks of sandstone and receives several tributaries which drain the swamp lands west of the line.

In sections 12, 13 and part of sections 14, 23 and 24, grow spruce and jackpine from four to eight inches in diameter. The other sections are covered with burnt timber and deadfall overgrown with a second growth of pine or scrub and willow. The land is also stony in many places. In the swamps, which are numerous, grow small spruce trees up to six inches in diameter. In the southern half of this township the soil is clay mixed with sand and a clay subsoil, which changes to gravel and stones in the other half. A quarter of mile west of the corner of section 36 there is some open prairie land.

In the northern part of township 56, there are many isolated groups of hills which are separated by marshes and have sandy and gravelly slopes supporting a light growth of scrubby poplar and jackpine. From the top (4,625 feet) of one of these hills six chains east of section 24 a good view of the Rocky mountains was obtained and measurements were taken on all the prominent peaks in order to determine their positions and altitudes. In the southern half, which is high rolling, meanders, a large creek which crosses the line in section 13. At one mile east of this point it receives from the north a tributary as large as itself. With a volume of water thus doubled the main stream now takes a northeasterly direction towards Baptiste river into which it empties. One mile north of the junction of these two creeks the width of the valley of the northern tributary is considerably reduced by escarpments of sandstone forty to fifty feet high, which reach down to the water's edge, thus causing a gorge. This spot would be an ideal one for developing water-power should the necessity arise in the future.

In the expansion of the valley above the gorge there is quite a stretch of prairie land and partly open country.

These remarks apply also to the valley of the main stream which flows along the north boundary of section 12.

The only live timber (spruce and pine, six to ten inches in diameter) to be found in this township grows in a narrow belt along the left bank of the last mentioned stream.

The soil is generally a sandy clay overlying a subsoil of clay.

Approaching the mountains the elevation of each successive ridge increases till in township 54 there is a prominent landmark called Jarvis ridge (altitude 5,050 feet). It is a remarkably straight but narrow terrace which extends across the centre of this township from east to west and continues on the same bearing far into range 2, where it terminates in an abrupt descent of several hundred feet to the general level of the country. This table-land is the watershed between the valley of Endurance creek (4,400 feet), which drains the southern half of this township and another large stream which flows along its northern boundary.

Sections 12, 13, 14, 15, 16, 17, 18 and 24, are wooded with spruce and pine, six to twelve inches in diameter. The other sections are covered with deadfall overgrown with willow or a second growth of jackpine. Large tracts of land in this township are swampy and marshy.

The soil, which is of clay mixed with sand, varies in depth from four to eight inches. The subsoil is generally clay.

The surface of this township is very hilly and it has a general downward slope towards the east.

The next stream of any size is a branch of Hay river. It runs diagonally across township 53, entering at its northwest corner and crossing its east boundary in section 1. From that point (altitude 4,600 feet) it flows eastward and three miles far-



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ther joins Hay river (altitude 4,050 feet) in section 51, township 53, range 27, west of the fifth meridian.

The foothills of the Rocky mountains, which in this vicinity trend northwesterly, cover one-half of this township. They rise to an altitude of 6,000 feet above sea and at their tops frequently appear escarpments of brown coloured sandstone. In the numerous narrow valleys which divide each range of hills are found strips of open and grassy land with good soil. These low lands, however, are liable to be flooded.

Along the hillsides the soil is generally gravel mixed with clay, and near the top the land is often very stony. Years ago a destructive fire overran this country, which is now covered with deadfall.

The pack trail from Jasper House to Big Smoky river intersects the east boundary of section 24. From that point it appears to follow the valley of the tributary to Hay river above mentioned. Owing to the proximity of the Bullrush mountains (altitude over 8,000 feet), which at that late season might have proved a formidable obstacle to the production of the line farther south, the survey of the sixth meridian was discontinued at the northeast corner of township 52. On November 14, I moved my camp to the northeast corner of township 52, range 27, west of the fifth meridian, and on the following days I surveyed south twelve miles more to the thirteenth correction line.

DESCRIPTION OF THE COUNTRY ADJOINING THE EAST BOUNDARY OF TOWNSHIPS 52 AND 51,  
RANGES 26 AND 27, WEST OF THE FIFTH MERIDIAN.

Beginning at the fourteenth base line the east boundary of township 52, range 27, west of the fifth meridian, passes through three-quarters of a mile of rolling and wooded land, having a loamy soil resting on a clay subsoil. Beyond this the line enters a burnt forest and ascends gradually to the eastern slope of a range of hills which divide the basin of Hay river, west of the line, from a troughlike depression running parallel with the line at an average distance of one mile and a half east of it.

The surface of the southern part of this township is broken by hills rising to an altitude of 6,000 feet and whose tops and slopes are covered with burnt timber, most of which is still standing, whilst lower down where the ground is often marshy, some small areas support live spruce.

The central part is high rolling country merging into a series of benches of decreasing altitudes as one approaches Hay river, a mountain stream fifty yards wide and with a swift current flowing over a stony bottom. In the bottom lands, adjacent to the river the soil is good, on the benches, it is sandy clay overlying gravel.

The pack trail from Jasper House to Big Smoky river intersects the east boundary of this township in section 36. It then runs west two miles farther and after crossing a deep gulch with a creek which drains an extensive spruce swamp this trail continues northwesterly across the north boundary of section 34 towards the ford on Hay river about one mile farther on. At this point (altitude 4,050 feet) in the month of September the water was three feet deep in the channel. Some prairie land exists along the left bank of the river and this spot used to be a favourite camping ground for the Indian hunters as there is an abundance of good feed for their ponies. Above the ford the general course (south 20° west) of the river leads into the mountains, here the river flows between high cutbanks of gravel.

Below the ford, where the river turns to the northeast the banks are lower. Through repeated fires the spruce forest which once covered this valley has disappeared and to-day patches of cleared land are found in many places along this stream.

The general elevation of the valley of Hay river, near the ford is 4,050 feet. It enters the north boundary of this township in section 32, and from that point it continues for several miles in a southerly direction towards the Rocky mountains.



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A narrow, but deep valley, bounded to the east by hills rising 1,400 feet above its level, runs across the whole length of township 52, range 26, from section 32 to section 5.

In this depression are many lakes; the two largest ones, three miles and a half apart are named Jarvis lake (altitude 3,875 feet) and Gregg lake. The upper lake is the larger and is studded with islands, all wooded; the other one is very shallow; both are teeming with whitefish, pike and ling. These lakes are all connected and by the outlet of Gregg lake drain into Hay river, which flows into Baptiste river, itself an important western tributary to the Athabaska.

Jarvis lake covers nearly three-fourths of section 32, and Gregg lake the greatest part of section 5 and the half of section 8. In these lakes and all the streams which empty into them, the water is fresh.

What constitutes the only level land in this township would be included in section 17, the soil being wet and swampy, and sections 20 and 29, which contain some good prairie land, well drained. This strip of arable soil is bounded on the west by Gregg creek and on the east by a succession of hills culminating in a terrace or table land (1,400 feet above the valley).

The west slope of this high land drops abruptly to the eastern shore of Gregg lake, it has no vegetation thus exposing to view many ledges of sandstone. The southern slope, however, is densely wooded, not so abrupt and terminates at the edge of two other lakes (4,200 feet) draining towards the valley of Jarvis lake.

The pack trail between Jasper House and Big Smoky river passes from south to north through this township, which it enters in section 6. Here it follows the pine ridges along the west shore of Jarvis lake. In sections 17 and 29 it crosses Gregg creek. From the last crossing it goes to the west shore of the lower lake, where a branch of this trail follows close to its shore and eventually leads also to Hay river. The main trail, however, takes a westerly direction and intersects the east boundary of township 52, range 27, in section 36.

In section 17 another well travelled pack trail starts from the Jasper House and Big Smoky river main trail and passing at a short distance south of two small lakes enters a pass (4,350 feet) opening into the valley of Athabaska river, whence it leads in a southeast direction to a point on the river opposite the mouth of Prairie creek. At this point Athabaska river is not fordable, and the crossing is usually effected on rafts. Here also to the south very high perpendicular cliffs extend some distance along the west bank of the river. The opposite bank is low and close to it is an island wooded with spruce and cottonwood.

From the landing on the right bank of the river start two trails, one leading south follows the valley of the Athabaska, whilst the other one after winding up the steep side of high hills leads to Jock's ranch, three miles farther in the valley of Prairie creek. Jock's ranch is the first inhabited place we come to on the road to the Yellowhead pass, after leaving the 'big eddy' settlement, on Macleod river.

In sections 6, 12 and 13, of township 52, range 26, the timber is mostly jackpine from six to ten inches in diameter, spruce and poplar. The soil is a yellow clay mixed with gravel; in the hills the land is stony.

From the northeast corner of township 51, range 27, the line descends gradually to the level of the depression in which are Jarvis and Gregg lakes. In section 1, it passes over Solomon mountain (altitude 5,200 feet) a sandstone bluff with precipitous sides to the west, while north and east its foothills spread far into the interior of the next range.

The surface of this township is also very hilly and deeply furrowed by the valley of Solomon creek and the gulches of its tributaries.



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The soil is sandy, but the subsoil is gravel or stones mixed with clay; nearly all the timber has been destroyed by fire, a few scattered small patches of green bush appearing, however, here and there on the slopes of the highest hills.

The pack trail from Jasper House to 'Grande prairie' crosses the line in section 13. It winds through some open land, which slopes down to the southwest and extends to the valley of Solomon creek. Beyond this stream, a stretch of partly open country, one mile or so in width, continues for six miles farther south to the foot of the Bullrush mountains (altitude 8,000 feet).

Towards the east, this prairie land ends at a narrow strip of green timber growing along the west shore of Brulé lake, (altitude 3,200 feet) an enlargement of Athabaska river.

The depression which crosses from north to south in township 52 continues also on the same bearing and with the same features through township 51. The open land begins at the southern extremity of Jarvis lake (altitude 3,875 feet) in the middle of section 32. It forms a strip less than a mile wide and which extends through sections 29, 30, 19 and 18, where, owing to the vicinity of Solomon mountain (altitude 5,200 feet) it turns to the southwest. This prairie land has soil of sandy loam twelve inches deep overlying a subsoil of gravel mixed with clay. Where its edge merges into the foothills the surface is covered with much scrub poplar and willow brush while the top soil is also shallow.

In the middle of section 18 there is a hay meadow. The pack trail between Jasper House and Big Smoky river crosses the west boundary of this township in section 18, whence it turns north and winds two miles and a half across well drained and open land. In section 30 it enters the open pine woods along the west shore of Jarvis lake. Spruce and jackpine grow in sections 19, 30 and 31, but on the high hills which cover the rest of this township all the timber is burnt.

My next work was a traverse survey eighteen and one-quarter miles long. Its initial point was the temporary post planted at the southeast corner of township 51, range 27, west of the fifth meridian on the north side of the road allowance along the thirteenth correction line.

By that traverse the distance between this line and the mouth of Solomon creek is two and one-quarter miles. This creek is a western tributary of Athabaska river which it joins at the point where the river flows out of Brulé lake. Thence the survey continues for seven miles along the western shore of this lake which, at the time of survey (November 26) was nearly dry, the subsiding waters being confined to a single channel winding amongst the quicksands and banks of fine silt which form the bottom of the lake.

At the southern end of Brulé lake it was necessary to carry the survey over a high rocky ridge which projects eastward from the mountains and ends abruptly at the water's edge of Athabaska river. The pack trail ascends also nearly 1,000 feet along the mountain side. Beyond this ridge instead of following the river whose banks are heavily wooded, the survey was continued westwards along the foothills and in close proximity to the pack trail which passes through the more open sections of the country. In section 18, township 49, range 27, it descends to a large flat and after crossing Moose creek, which rises from a lake in the mountains, it leads through level prairie land which covers parts of sections 18 and 7. On leaving this prairie the survey passes over high and partly timbered hills overlooking Athabaska river whose left side it follows up to the east boundary line of section 1, township 49, range 1, west of the sixth meridian. This line was surveyed south from the quarter section post to the northeast corner of township 48, where the thirteenth base line should intersect the sixth meridian.

#### REMARKS ON THE COUNTRY ADJOINING ATHABASKA RIVER, ABOVE AND BELOW BRULÉ LAKE.

Brulé lake is a shallow expansion of Athabaska river. It is about one mile and a quarter wide and six miles and a half long, with its longer axis in the direction



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of the meridian. On its eastern shore are sandy dunes denuded of vegetation. Dunes were also noticed along the right bank of the river a few miles above the lake and especially near the mouth of Fiddle creek where standing live trees at the edge of the woods, which here extends to the water's edge, are buried to the depth of fifteen or twenty feet in this fine sand which is constantly being driven in that direction by the prevailing southern winds. These dunes also apparently supply part of the material which is gradually filling Brule lake.

Very different is the country along the west shore which is low and bordered with green timber next to which comes level prairie land gently rising towards the escarpment of Bullrush mountains, forming an impassable barrier one mile west of the lake. The strip of prairie land is six miles long by one mile wide, is well watered by numerous small mountain streams and its altitude above the sea is practically the same as the place twenty-five miles farther south where Messrs. Swift and Moberly Bros. and others raise grain and root crops. This land should be just as fit for farming as any of the other places.

This prairie land is easily accessible from two directions. After the Athabaska has been crossed one road starting from Athabaska Landing opposite the mouth of Prairie creek, leads to it by following a southwesterly direction over the grassy benches along the left bank of the river. On this road at about three miles above the landing we passed some good prairie land and extensive hay meadows at the upper end of which Mr. Smith has built a house. One mile beyond Smith's ranch the trail crosses a large creek flowing in a very deep gulch with high precipitous banks and ascends to a plateau several hundred feet above the river level. A mile farther the trail bifurcates. The left branch keeps along the eastern edge of the plateau which overlooks Athabaska river and continues across prairie for three miles farther, when it enters open woods of pine and scattered spruce averaging eight inches. This forest extends easterly to the river which runs within half a mile of the edge of the plateau. South and west it extends to the valley of Solomon creek and the foothills of Solomon mountain. In crossing this forest the trail keeps at the same altitude descending at last to the level of Athabaska river, where it receives Solomon creek. After crossing the creek near its mouth, the trail follows for a quarter of a mile close to the shore of Brulé lake and ascends to the top of some timbered ridges which shut off the valley of Solomon creek from the south. Shortly after it debouches in the prairie lands previously referred to. The right branch of this trail turns more to the southwest and skirts the western edge of the forest at the foot of Solomon mountain, crossing Solomon creek three or four miles above its confluence with the Athabaska, whence it leads also to the prairie lands adjacent to the west shore of Brulé lake. These lands could also be reached from the south by a road which leaves the main Yellowhead pass road close to Stony river but in my opinion the others are shorter and easier to travel.

Above Brulé lake, Athabaska river divides into innumerable channels, separated sometimes by wooded islands but more frequently by large gravel bars covered with large quantities of drift wood through which grow thick willows.

Where it issues from the lake the river is confined to a single channel and a quarter of a mile below the lake it turns to the northeast. Here its channel is obstructed by large boulders. With this exception its course is remarkably free from obstacles and continues in one channel, only an occasional wooded island being encountered, till at Trail creek, one of its eastern tributaries, another rapid occurs in a sharp bend of the river. A bad canyon, however, is reported to exist somewhere near the confluence of this river with Baptiste river.

On December 5, having completed the survey of the sixth meridian as far as instructed, I started for Athabaska river, crossing on the way Stony river near the place where it leaves the mountains. The river which here runs in a single channel is quite deep and very swift, but I found a better ford half a mile farther down



where it divides into several shallow channels spreading through a wide stony flat. After crossing this river the trail which we had followed thus far, connects with the Yellowhead pass trail. From the junction of these trails, we travelled through an extensive prairie as far as the left bank of the Athabaska, which we forded without difficulty, as it was still free of ice at that late date. This is the place where all pack trains bound for Yellowhead Pass cross the Athabaska. It is a long and intricate ford, and its crossing should not be attempted at high water by parties unacquainted with the location of the different gravel bars which have to be partly followed. There are many channels to cross, some of them quite deep and swift. This network of channels is a feature of the river in this vicinity. Below the crossing they extend to the head of Brulé lake, where years ago there used to be another ford just where Drystone creek enters the river from the east; but the gravel bars here having been partly washed away, the ford is not practicable to-day except at very low water.

On December 6 I continued my journey along the right bank of the river and camped that night on Fiddle creek, one of its eastern tributaries.

The approach to Fiddle creek from the north may be properly called the gateway to the Rocky mountains in the neighbourhood. Their massive escarpments of grey limestone rising in successive tiers to seven and eight thousand feet above the sea add much to the landscape on both sides of Athabaska river, and the scenery compares favourably with that of other sections of the Rockies.

In the angle formed by the valleys of Fiddle creek and Athabaska river stands 'Roche à Miette,' a prominent landmark, visible from a long distance. It is the abrupt western termination of the high range of mountains which divide the valleys of Drystone and Fiddle creeks. This last stream flows from east to west through a deep narrow gorge, cut through rugged and high peaks. At about three mile up one of its southern affluents are several hot springs; two of them are reported to have a very high temperature. From the junction of these streams it is about twelve miles to the valley of Athabaska river. At present it is difficult to reach these hot springs, for the only path which leads to them is very faint in many places, and winds high up the precipitous sides of the mountains south of the creek.

On December 7, we left Fiddle creek and two and one-half miles farther forded Drystone creek, another mountain stream. One mile north of the ford we came to pine and spruce woods on the divide between Drystone creek and Prairie creek. The forest gradually disappears as one travels northward and within four miles of Jock's house the country which has been burnt over repeatedly has a generally open appearance. Through this flows Prairie creek and three miles above its confluence with Athabaska river stands Jock's house. Here Jock and his partner J. J. Gregg, settled eighteen years ago and for a long while theirs was the only habitation between the new settlements at the eastern extremity of Chip lake and Moberly's ranch at the foot of the mountains. Lately it became the distributing point for several parties of engineers sent by the Grand Trunk Pacific company to explore the passes for their railway. Though the land along Prairie creek is fertile, very little cultivation has been done by these men who divide their spare time between trading with the natives and ranching for which this country is well adapted.

As a result of the warm Chinook winds which frequently blow down the valley, the winters here are not severe and the fall of snow is so light that hay is never put up for cattle or horses, nor shelter provided for them.

On a small tributary which springs from the hills east of Prairie creek into which it flows, beds of coal have been discovered and coal claims were staked during last summer.

A pack trail seldom travelled by whites, starts from Jock's ranch and proceeds eastwards along the valley of Coal creek which it follows to the divide, it continues in the same direction till near McLeod river it meets another trail running at right



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angles to the former and which connects 'The Leavings' on McLeod river with the head waters of McLeod, Pembina and Brazeau rivers. At first I intended to reach the big eddy of the McLeod by following this trail and thus examine this new section of country so as to be able to report on it but, being informed that the grain ordered for the return trip to Edmonton had not yet been delivered, I reluctantly gave up my project and had to take the old yellowhead pass trail, which follows the right bank of Athabaska river to its intersection with the fourteenth base line where I knew oats had been cached by Mr. Geo. Ross, D.L.S.

The country adjacent to the trail connecting Athabaska river with the big eddy of McLeod river is so minutely described by Mr. Geo. Ross who surveyed the fourteenth base line which runs through it that I need not further refer to it.

To sum up, the larger portion of the country visited last summer, if we except some scattered areas of arable land which have proved productive, will be more suited to stock-raising than to farming, after the land which is quite rough and has a light soil, has been cleared of the windfall which at present covers the greater part of it. In many places along the valleys of the largest streams will be found bluffs of spruce and poplar, and clumps of thick willow which make fine shelter for cattle. In the intervals are patches of prairie land and hay meadows, some of them quite large.

During the summer while engaged in the survey of the sixth meridian, I never missed an opportunity of taking measurements from proper elevations along the line to all the most prominent peaks of the Rockies which came into view.

With these data I have worked out their altitude above the sea and also the position of these mountains relatively to the sixth meridian, but, owing to the greater elevation of the country west of the sixth meridian and sometimes also to thick bush near my stations no outlook to peaks farther west than thirty-five miles could be obtained. Beginning at the valley of the Athabaska and proceeding westward we have the Bullrush mountains which extend eastwards beyond the sixth meridian, northeasterly they extend to Solomon creek and southwesterly to stony river. To the northwest they are separated from the main range of the Rocky Mountains by Hay river, which flows out of Rocky lake fed by mountain streams. Extensive prairies surround this lake which is much frequented by the natives during the summer as its vicinity affords ideal camping grounds. South of the lake is a low divide between the valleys of Hay and Stony rivers which approach within half a mile of each other.

Northwest of Bullrush Mountains from which they are separated by the valley of Hay river are other mountains presenting a fairly regular outline bearing north  $70^{\circ}$  west and apparently terminating twenty miles farther at a conical shaped peak (altitude 8,850 feet). From that point the mountains seem to recede towards the southwest.

Returning to the valley of the Athabaska and looking southwards from the middle of the east boundary of section 1, township 49, on the sixth meridian, one cannot help noticing an isolated high peak (altitude 9,100 feet) of pyramidal shape and standing apparently in the middle of the valley. In reality it occupies the angle formed at the entrance to Yellowhead pass by Athabaska and Miette rivers. Near the base of this peak stood the old 'Henry House,' a trading post long ago abandoned. On Capt. Palliser's map this peak is called Pyramid Mountain.

Of the mountains east of Athabaska river the most prominent summits of the range separating Drystone creek from Fiddle creek were determined as far east as the sources of McLeod and Pembina rivers.

As for the next range rising north of Rocky river, only these mountains at its western extremity and a few peaks near the head waters of this river were located, as the intermediate peaks are hidden from view by the first range above mentioned.

Regarding the climatic conditions in this country, I may state that up to the middle of August we suffered great discomfort and experienced vexatious delays due to continuous heavy rains, often followed by ten or twelve inches of snow, which,



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however, would melt away in a few days. I may also add that in midsummer, ice half an inch or more in thickness frequently formed during the night on water left in receptacles in my tent. Such unusual occurrences could, however, be accounted for by keeping in mind the great elevation (4,400 feet) of the country.

These daily outpours which had prevailed in the district where I was surveying so long as we remained thirty or forty miles away from the mountains, gradually decreased in frequency and intensity the nearer we got to them. The reason for this change is apparent. Western storms originate in the mountains, as on any bright day we could plainly see the clouds forming around the highest peaks. In the interval a vacuum is caused in the superheated air on the plains to the east. Hence the rush of the colder air from the higher altitude towards the lower level of the plains, carrying before it the storm clouds; precipitation from those would begin only when at already some distance from the origin. However, these may be only local conditions.

To compensate for the disagreeable weather of the early part of the season we were favoured with the finest fall weather it has ever been my luck to experience in the northern country, and up to November the days were balmy; as there was very little snow on the ground the survey work could be carried on without interruption.

Large game is plentiful in this country and consists of moose, along the valleys of Baptiste and Hay rivers; black, cinnamon and silver-tip bears are numerous throughout. Mountain sheep and goats live in the foothills and appear in great numbers west of Brulé lake. Beavers were noticed at work on the headwaters of Simonette river and on some tributaries of Baptiste and Hay rivers. Small game, such as grouse, rabbits and waterfowl are scarce, but the lakes are teeming with whitefish and pike; and in the running streams trout of many species were caught.

On December 7, I returned with my outfit to Gregg's ranch, near Prairie creek, and arranged with him for the transport to Lake St. Ann of part of my outfit, some of my pack horses being so poor as to render them unfit to carry heavy loads on such a trip at that season.

On December 9 we left for Lake St. Ann, which we reached on the 20th. Three days later I was in Edmonton.

On the 26th, having received the necessary funds, I paid off the party and on the 29th left for Ottawa, where I arrived on January 2.

I have the honour to be, sir,

Your obedient servant,

A. SAINT CYR, *D.L.S.*



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## APPENDIX No. 35.

## REPORT OF J. B. SAINT CYR, D.L.S.

## SETTLEMENT SURVEYS IN PEACE RIVER DISTRICT.

MONTREAL, February 24, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit the following general report on my field operations during the past season in Peace River district.

In accordance with your instructions, dated March 1, 8 and 15, 1907, I left St. Anne de la Perade on March 22 for the west. I arrived in Edmonton on the 29th of the same month. I began making the necessary arrangements and hired the men, and on April 10, I left Edmonton with three teams. On the 13th we arrived at Athabaska Landing and on the night of the 17th, we reached the lower end of Lesser Slave lake. On the evening of the 25th we arrived at Peace River landing, where the ice had broken two days before. The banks and shores of the river were regular walls of blocks of ice and a place for landing could not be seen on either side of the river. In order not to stay idle waiting for a more favourable chance to cross, we commenced the subdivision of Peace River Landing settlement and worked at it until May 6, when we could take my outfit across the river.

On May 8, we left Peace River landing on our way to Dunvegan, where we arrived on the 11th. On the 14th and 15th the teamsters which I sent for, came to Dunvegan and took my outfit to Spirit river, and on the 17th of the same month we started the survey of Spirit River settlement. Before giving any description of this Spirit River country, I will mention 'Little prairie,' about twenty miles southeast of Peace River landing on Lesser Slave lake trail as a good location for some future survey. There are a few squatters there and each one of them is very anxious to have a surveyor locate him and to make some subdivision. There is quite a long stretch of good country, prairie and bluffs at 'Little prairie' along the wagon trail.

North Heart river drains that country, furnishing a permanent supply of good water. Timber for building purposes is also plentiful in the vicinity of 'Little prairie,' and in fact all along the trail. Peace River landing is a very small flat, surrounded by hills ranging from six hundred to eight hundred feet above Peace river. The flat itself is about fifteen feet above the river at low water. The greater portion of that level land was surveyed by me in the spring, as above stated.

Eight miles above Peace River landing and on the west side of the river begins Shaftsbury settlement, occupying a narrow but very long flat of the best soil. The crop raised this year in that settlement was magnificent, the oats and wheat being of the highest grade. Squatters are scattered from this settlement to Peace River landing along the river waiting for the survey of this tract of land. The country there is undulating and gently rolling, but the soil is comparatively good. From Shaftsbury settlement two trails, one southwest and the other west, diverge for a certain distance to meet again east of Burnt river, forming there the Dunvegan wagon trail. The more southerly trail crosses a very good farming country. The soil is richer and contains more moisture than on the upper trail. A spring creek



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flowing through township S1, range 25, west of the fifth meridian, runs both in winter and summer, supplying the best of water. Hundreds of settlers could locate with those already established there. The subdivision of a few townships in that vicinity is urgent. On the other trail the country is mostly prairie with the exception of the land bordering on Burnt river, where it is prairie and bluffs. Later on townships S2, S3 and S4, range 1, west of the sixth meridian, might be subdivided and afford a good location for newcomers. Burnt river runs until late in the summer and timber for building purposes is plentiful along its banks. The country has a very fine aspect and is nearly level.

Dunvegan as well as Peace River landing is another navigation point. The flat on the north side of Peace river is all taken up; it is surrounded by hills varying from 400 to 600 feet high. The survey of that settlement will probably be completed next summer. A belt of timber six miles wide borders Peace river on the south side along Spirit river road. South of that timber the country is prairie and bluffs. The land is gently rolling from the timber towards the south for about four miles, where it begins to be level as far as Spirit river, a distance of about nine miles. The open country around Spirit river extends about ten miles to the north, eight miles to the southeast, four miles to the south and about fifteen miles to the northwest. All this land is well adapted for farming and ranching purposes. Spirit river with a few lakes here and there furnishes a good supply of water nearly all the year around. Timber for building purposes and wood for fuel are plentiful. The climate is very good in all that district and early summer frosts are not frequent. There are a few squatters on the Dunvegan road, north of Spirit river, asking for subdivision survey in that direction next summer. The grain and vegetables raised there last summer were exceedingly good. The people of that country are satisfied so far. Settlers will certainly before long join those pioneers of the country.

The survey of Spirit river settlement was commenced on May 17 and was completed on June 22, 1907. The settlement lies on both sides of Spirit river with two rows of lots. It measures about four and a half miles from east to west by about two and a quarter miles in depth and contains fifty-nine lots of different sizes all of the best farming land. The people of that settlement are well encouraged and expect to have a saw-mill in operation next summer and to have threshing machines and a boring outfit, as they intend to bore wells in different parts of the district.

Following out my instructions, we left Spirit river on June 23 on our way to 'Grande prairie, where we arrived on the 26th of the same month. We first surveyed the north, east and west boundaries of townships 72 and 71, range 6, west of the sixth meridian and subdivided a portion in each township, also Flyingshot Lake settlement, in township 71, range 6. These surveys commenced on June 24, and were completed on August 20. 'Grande prairie' had a very fine appearance this summer and no better grazing land and hay land can be seen anywhere. The surface is prairie and bluffs, gently undulating. The soil is a deep black loam and deep black sandy loam overlying a clay or sandy clay subsoil. That open country may extend from east to west about forty miles and nearly twenty-four miles from north to south. Streams cross the country in all directions and there are also a few good sized lakes of soft water. Timber for building purposes is plentiful and can be procured almost everywhere. The land is suitable for farming and ranching purposes. The climate is very good and early summer frosts are not frequent. Vegetables and grain are successfully raised there. The few scattered squatters of 'Grand prairie' appear to be satisfied and have great faith in the future of that country, which is large enough to make a province by itself. The means of communication for reaching that district are improving every year and people can travel with more comfort and in less time to that northwestern country than before. I never witnessed such fine weather anywhere as last fall in that district. Having completed the above mentioned surveys in 'Grande prairie' we came to Spirit river to outfit for further surveys north of Birch hills and across Brulé river, Spirit and Peace river as far as the twenty-first base line.



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On August 27, we left Spirit river for Grizzly Bear prairie where we arrived two days later. That prairie is nothing but a narrow strip of prairie following a wagon trail, as far as township 77, range 2, west of the sixth meridian, a distance of about twenty miles from Spirit river. According to additional instructions received in August we began the survey of the east boundaries of townships 77, 78, 79 and 80, ranges 3 and 4 and made the subdivision of township 78, range 3, west of the sixth meridian. These surveys were commenced on August 30 and were completed on December 24. The country surveyed is mostly thick bush with the exception of that portion of township 77, range 3, situated north of Birch hills, which is prairie and bluffs. The remaining portion of that township, viz.: four miles by six miles on Birch hills, is thickly timbered with spruce, poplar, birch and large willow with patches of jackpine here and there. The spruce timber is of good quality and suitable for lumbering purposes. The average height of Birch hills above the prairie is about two hundred and twenty-five feet. In township 78, range 3, half way between Brulé river and the wagon road, there is another belt of fine spruce timber suitable for making lumber extending nearly five miles from west to east with an average width of about a mile. The soil is fairly good from the foot of Birch hills to a mile north of the trail, but in the remaining portion of township 78 and all township 79, the soil is of inferior quality and thickly timbered with poplar, spruce and large willow with windfall here and there. The hills bordering Brulé river in townships 78 and 79, range 3, west of the sixth meridian vary in height from three hundred to four hundred feet. Those of Spirit river in township 79, range 3, average two hundred feet in height, while the hills of Peace river in township 80, range 3, are from four to six hundred feet high. In this last township the surface is prairie and bluffs, viz.: for that portion situated on the north side of Peace river. The soil is very good and well adapted for farming and ranching purposes. There is a narrow flat on the river bank in that township, called 'Green Island' flat; it is about two miles long and is all occupied by squatters outside of the Indian reserve. From the top of Peace river hills as far as the view extends the country is level.

While travelling on Spirit river and in making the traverse of Brulé river, I noticed in the cutbanks oxide of iron here and there. Pieces of coal were also found in the cutbanks of Spirit river, in township 79, range 3. I am sending to the department some specimens gathered on the above mentioned rivers.

On December 27 we went to Dunvegan to survey a portion of township 80, range 4 west of the sixth meridian, and to make some measurements in Dunvegan settlement. On January 7, 1908, we left for Peace River Landing, where we made a traverse from the twenty-second base line to the northwest corner of Peace River Landing settlement. It took two days to perform this work, and I started afterwards for Edmonton, where I arrived on January 23, and at Ottawa on the 29th.

From what I have seen these last two years and also from reliable information from the residents of Peace river district, I must say that regarding the climate, the quality of the soil, the hay, the water supply, the timber, &c., this northwestern country has more advantages than the other parts of the west. The days are much longer in summer and the grain and vegetables grow more rapidly than farther south. The fall is much nicer and not so cold as in many parts of the west, and also the spring is comparatively early. Means of communication are getting better every year, so that there is nothing to prevent settlers from going into that country, where they can make a success of mixed farming. When the district is more settled that will certainly induce the railway companies to build a line to that country. I believe that in the near future it will prove to be exceedingly good as a farming and ranching country.

I have the honour to be, sir,

Your obedient servant,

J. B. SAINT CYR, D.L.S.



## APPENDIX No. 36.

## REPORT OF B. J. SAUNDERS, D.L.S.

SURVEY OF PARTS OF THE FOURTH AND FIFTH BASE LINES EAST OF THE PRINCIPAL MERIDIAN

EDMONTON, ALTA., August 3, 1907.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR.—I have the honour to submit the following report on the survey of the fourth base line through ranges 13, 14 and part of 15, and the fifth base line through ranges 13, 14, 15, 16 and 17, east of the principal meridian, in the province of Manitoba, surveyed under your instructions, dated May 25, 1906.

Having undertaken some private surveys before receiving your instructions, I was unable to proceed with this base line work until early in the autumn of last year. In any case, from knowledge gained of the conditions of the country, I considered it advisable to defer the work until the swamps and muskegs had partly dried up.

I shipped my horses and outfit from Edmonton to Winnipeg on September 21, via the Canadian Northern railway, and they arrived in Winnipeg on the 28th. On the following day I went to Lac du Bonnet and Whitemouth to look the ground over before deciding which base line to start first, and from what I learned, made up my mind to proceed with the fourth base line and leave the fifth base line until winter time, when the ice had formed on the lakes and rivers.

Having found out that no men were available at Whitemouth, I organized my party in Winnipeg and returned to Whitemouth on October 9, where my assistant had been engaged for the previous week examining the country east of Whitemouth to find a convenient route into the northeast corner of township 12, range 12. Two or three days were spent in getting the camp in shape, road-making and building a temporary bridge across Bog river, as well as forwarding supplies.

On October 13 we moved camp from Whitemouth to the east side of Bog river, on section 2, township 12, range 12, to within six or seven miles of our starting point, and by the end of the following week got the camp to within three-quarters of a mile of that point by making use of an old timber road.

On Saturday, October 20, the production of the base line was started from the northeast corner of township 12, range 12, and the work was carried on until December 15, by which time we had reached the northeast corner of section 34, township 12, range 15. Work was discontinued at this time in compliance with your letter of December 4, instructing me to proceed at once with the survey of the fifth base, so that the subdivision of the townships adjacent thereto could be undertaken at an early date.

As embodied in the reports of the several ranges through which this (fourth) base line passes, the country consists chiefly of rocky land and muskeg, and has been more or less burned over. In my opinion, very little of it is adapted for agricultural pursuits.

At the present time there is practically no timber left that would be of use for lumber. In ranges 13 and 14 there is a fair amount of standing dead timber that could be utilized for firewood, and in favourable seasons could be hauled to Darwin



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station on the main line of the Canadian Pacific railway. The wood industry east of Winnipeg has become quite important, and large quantities are shipped to that city during the winter months from Molson, Whitemouth and Darwin, on the main line of the railway, and from all the stations along the Lac du Bonnet branch north of Molson.

Around Whitemouth mixed farming operations are carried on to a large extent, hay being one of the chief commodities grown. Timothy and clover grow luxuriantly and are easily marketed.

At the present time extensive operations are going on in railway construction in double-tracking the main line of the Canadian Pacific railway and in the construction of the new Transcontinental line which passes only a few miles south of Whitemouth.

The fourth base line crosses Whiteshell river near the east side of range 14 and again in range 15 at the point where the survey was discontinued. This river forms the drainage channel of Whiteshell and Cross lakes, and of other lakes in that neighbourhood. It widens out a number of times into lakes between which there is usually a small fall or rapids.

No economic minerals were met with.

On Sunday, December 16, camp was struck and a start made back to Whitemouth where we arrived on the following day. Two or three days were employed in purchasing hay and oats and shipping them by rail to Lac du Bonnet. On the following Saturday we started across country with the camp, over a fairly good winter road for Lac du Bonnet station, reaching that point the next day. Our car having arrived it was unloaded on the 26th, and the greater part of our supplies stored. Early the next morning a part of the camp pulled out for the fifth base line and camped that night at the mouth of Oiseau river near the northeast corner of Lac du Bonnet proper. The few days following were spent in taking up the line in range 12 and waiting for an observation for azimuth. Having been at length successful in getting a satisfactory observation, the survey of this base was commenced on January 6, and on March 12 it was completed to the east side of range 17.

The survey of this base line was found to be a very difficult and trying piece of work owing to the great depth of snow which prevailed last winter, combined with the intense cold.

The country along this base line consists chiefly of rocky formation broken by muskegs. Lac du Bonnet extends about a mile and a half into range 13. Adjacent to the north boundary of township 16, range 15, there is a lake about two and one-half miles in length. In range 16 there are three lakes adjacent to and intersected by the line, while in range 17 as many as five lakes are so situated. The end of the line established falls in a lake some three or four miles in width.

The shores of these lakes generally speaking are rocky but owing to the quantity of snow on the ground we were unable to judge of the probability of their carrying minerals of economic value. I do not consider any section of this country adapted to agricultural pursuits.

In range 13, adjacent to Lac du Bonnet, there is some fair sized timber consisting of spruce and poplar, while in the other four ranges the timber is very small and of no merchantable value. It consists chiefly of second growth, pitchpine, poplar and spruce.

At the present time that portion of Winnipeg river lying to the south of this base is attracting considerable attention in connection with the development of water-power for the transmission of electrical energy to Winnipeg. At Point du Bois falls in township 15, range 14 and 15, the city of Winnipeg has called for tenders for the work in connection with the installation of a power plant to develop about twenty thousand horse-power. On Pinawa channel of Winnipeg river the Winnipeg Electric company have a large power plant in operation and for over a year have been transmitting electrical energy to Winnipeg, a distance of some sixty or seventy miles.



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During the past winter they have been improving their water supply by the construction of a wing dam to divert a greater flow of water from the main stream into this channel.

I have the honour to be,  
Sir,  
Your obedient servant,

B. J. SAUNDERS, *D.L.S.*



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## APPENDIX No. 37.

## REPORT OF B. J. SAUNDERS.

## SURVEY IN THE PROVINCE OF MANITOBA.

EDMONTON, April 29, 1903.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour, in accordance with my instructions, dated August 23, 1907, to submit the following report on the survey of block outlines east of the principal meridian in the province of Manitoba, made the past fall and winter.

Having engaged a packer, I shipped my horses and outfit from Edmonton to Winnipeg on September 26, via Canadian Northern railway; they arrived in Winnipeg in due course and were transhipped via Canadian Pacific railway to Selkirk. Having organized my party in Winnipeg and purchased my supplies, I chartered the steamer *Mikado* to take the whole outfit from Selkirk to Fort Alexander, near the mouth of Winnipeg river, where we arrived on October 16. After obtaining permission from the officer in charge of the Hudson Bay Company's post at Fort Alexander, camp was pitched on the company's reserve.

The following day I began looking for the starting point of my survey at the northeast corner of township 18, range 8, east of the principal meridian, by going in almost directly west of the fort, but was unsuccessful in finding the objective point on account of the great difficulty in getting about in the deep water which covered the whole of the muskeg lying in that direction. Finally, I decided to go around by boat to Catfish creek, and follow that stream up to the Indian reserve boundary, and then go along this boundary and run a trial line into where I computed the northeast corner of township 18, range 8, should be found. This method proved successful, and the remains of the post marking this corner were duly located, also the bearing tree which witnessed the position of the post. Having obtained observations for time and azimuth, the work of running a meridian north was commenced for the purpose of locating the northeast corner of township 19A, range 8, in accordance with your supplementary instructions of October 11. This line runs through fractional township 19, range 8, Fort Alexander Indian reserve, and across Traverse bay, at the mouth of Winnipeg river.

By the time I got the triangulation made across Traverse bay, the weather had become very stormy, with prevailing high winds, alternating between southeast and northwest, but we were able to get some of our supplies moved down the east side of Lake Winnipeg as far as Black river Indian reserve, taking them down by sailboat. From November 15 until near the end of the month we were practically tied up on account of climatic conditions. During this time, ice formed across Winnipeg river at Fort Alexander three times, and was broken twice by the winds and spells of mild weather. This interval was employed in building a stable for the use of our horses when coming to the fort for supplies during the winter, and in getting flat sleighs made, and generally preparing for the winter's work.

On November 30, the ice in the river having become sufficiently strong to carry a man, work was resumed on the line, and on December 4, with two men, three horses and flat sleighs, I moved some supplies down the lake about twelve miles from Fort



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Alexander, and on the following day moved camp to Spruce point, a little further down the lake shore.

From this time on, the work progressed quite satisfactorily. The meridian outline was run between ranges 8 and 9, from township 19A to where this outline strikes the east shore of Lake Winnipeg, in township 26, also the sixth base was run east from this outline across range 9 east and west about half a mile to the shore of Lake Winnipeg in range 8. Similarly the seventh base was run across range 9, and west a little over four and three-quarters miles to the shore of Lake Winnipeg, in range 8.

All the country traversed by these lines is practically flat, with the exception of that along the north half of the line through township 25. A few rocky ridges are met with on both base lines in range 8. These rocks belong to the Laurentian formation and their general direction is northeast and southwest. The timber met with is mixed in variety and consists of spruce, tamarack, balsam, poplar, and birch with pitchpine on rocky ridges. Some elm and ash were noted at different points along the shore of the lake. The land is of rather poor quality, and is very wet on account of its being so flat and only about eight or twelve feet above the level of lake Winnipeg. It is not adapted to agricultural pursuits in its present condition.

Fort Alexander is an old and important post of the Hudson's Bay company, having been established in the early days of the company. It is situated on the southwesterly or left bank of Winnipeg river about three miles up from its mouth. The company's reserve consists of some six hundred and fifty acres and is situated within the Fort Alexander Indian reserve. This Indian reserve extends along both sides of Winnipeg river, a distance of nearly ten miles from its mouth. There are two Church of England schools, and one Roman Catholic school on the reserve. The latter is a large and modern structure having accommodation for about one hundred and fifty children for both residence and tuition.

Above Fort Alexander there is a farming settlement known as St. George settlement stretching along the river a distance of ten miles or more and as far up as Silver falls on Winnipeg river. At this falls it is proposed to develop water-power for generating electricity. There are also two sawmills near Fort Alexander and St. George, the surplus lumber manufactured being shipped to Selkirk by water during the period of navigation.

In township 21 and 22, ranges 8 and 9, is situated Black River Indian reserve at the mouth of Black river. There is a Church of England mission school here.

The Indians of this reserve, like those at Fort Alexander, find employment in fishing, cutting cord wood and railway ties and similar work. In township 25 the meridian outline between ranges 8 and 9 crosses the mouth of the Manigotagan or, as it is locally known, Bad Throat river. On this river there is a settlement also, but agricultural pursuits are not followed to any extent worthy of note. There is a large sawmill at Manigotagan belonging to the Lake Winnipeg Lumber company but nothing was being done last winter towards getting out logs for this summer's cut. The country around Manigotagan has been lumbered over quite extensively for some years.

The meridian outline between ranges 8 and 9 crosses a number of small bays of Lake Winnipeg in townships 20, 21, 22 and 25, and intersects the lake shore again in township 26, where the line was discontinued as instructed. The production of this line will cross the northeast end of Black island, one of the largest in Lake Winnipeg.

Opposite the end of the line, to the east, lies the mouth of Wanipigow, or as it is locally known, Hole river. Hole River Indian reserve is situated at the mouth of this river and the Hudson's Bay company has a trading post there.

About half a mile east of the line at this point, there is a gold prospect which has been worked for some years, but on account of lack of capital not much progress has



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been made. I have noticed recently from press reports that a company has been formed to thoroughly exploit this prospect. On Black island during the past winter work was being carried on in opening up an iron ore location.

On Saturday March 15 we started back for Fort Alexander, arriving there the next afternoon. A halt was made for two days to straighten up business matters and to wait for the incoming mail, before proceeding to the fourth base line northeast of Whitemouth, where work was discontinued in December, 1906. We proceeded to Whitemouth by way of Lac du Bonnet station which was reached in two days by the winter road through St. George and up along Winnipeg river and Lac du Bonnet. From the latter point a timber road was taken across what is known as 'The Island' lying between the two branches of Winnipeg river. We struck the main river again above the seven portages and having crossed over were able with some difficulty and danger to pick our way down along the shore ice to where we found a settler's trail a short distance above Whitemouth river.

Whitemouth was reached on Saturday, February 22. A few days were spent here in getting supplies down from Winnipeg and in purchasing horse feed. On the following Friday the whole outfit was shipped by rail to Dagero station on the Canadian Pacific railway. From this station I took a contractor's road in to the Transcontinental railway line for a distance of five miles, and then followed down a small lake to the Cross lake waters. Proceeding down these waters a temporary camp was made near their junction with the waters coming from Whiteshell lake to the north. On March 4 the end of the fourth base line was located at the northeast corner of section 34, township 12, range 15 where its survey was discontinued in December, 1906. Having taken up the line it was produced east to the east boundary of Manitoba, which it intersects just south of the forty-fifth mile post on that boundary as located by the Ontario and Manitoba boundary commission of 1897. This intersection is near the east side of range 17.

The portion of the line surveyed in March is similar to that described in my former report on this line with the exception that more lakes are met with. As a matter of fact the whole country from range 15 to the Ontario-Manitoba boundary is a network of lakes. Moose and caribou are found in large numbers and in their season duck are very plentiful on account of the large fields of wild rice on and along the lakes. It has frequently struck me that a large portion of eastern Manitoba should be set aside as a park, forest and game preserve, for which purpose it is almost ideal, besides it is not adapted to agricultural pursuits. After the completion of the new Transcontinental railway it will be still more easily accessible and should become of great interest to people desiring to get away from the cares of business life for a holiday season.

On March 29 we returned to Dagero, and having arranged for a car I shipped my horses and outfit to Winnipeg the next day. I had them transferred to the Canadian Northern railway at Winnipeg on March 31.

On the whole, last winter was a favourable one for field work, and although we had a number of cold dips they were not of long duration.

In conclusion I desire to express my thanks to the commissioner and officers of the Hudson's Bay company at Winnipeg and Fort Alexander for the assistance they gave me in every possible way, and I also must express the same feeling towards my assistant, Mr. G. W. MacLeod and several members of the party for their unflagging interest in the prosecution of the work.

I have the honour to be, sir,  
Your obedient servant,

B. J. SAUNDERS, *D.L.S.*



## APPENDIX No. 38.

## REPORT OF HENRY W. SELBY, D.L.S.

## SURVEYS IN NORTHERN ALBERTA.

TORONTO, January 31, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit the following report on the survey of township outlines, and the subdivision of lands situated at the west end of Lesser Slave lake, which has been done in accordance with your instructions, dated February 26, 1907. Upon receipt of these, the necessary supplies were ordered by telegraph and sent in on the ice. On April 25 I left for Edmonton, where my party was organized. We arrived at Athabaska Landing on May 14 in time to take the first York boat on Athabaska river for Lesser Slave lake. We arrived at the lake on May 22, but could not cross it as the ice had not yet broken up. The boat was unloaded there, and went back to Athabaska Landing for another load. Teams and wagons were engaged to transport the party and baggage around the north shore of the lake, rather than await the return of the York boat. This, owing to the low stage of the water, is not at all difficult to do, as the beach is wide, and with the exception of about ten miles of boulders is good for travelling with waggons, but it is bad for that ten miles and it cannot be avoided, until a road is cut through the woods along the shore. This, it is expected, will be done during the next year by the provincial authorities. It may be stated here that prospective settlers and others may, during the time of high water in the rivers (usually about two to three months) take passage by steamer at Athabaska Landing to the mouth of Lesser Slave river, thence by wagon road to the head of the rapids, about twenty miles, where another steamer can be taken to the west end of Lesser Slave lake, by this means making the trip in three days, which ordinarily takes from eight to ten days. Contractors are now putting in wing-dams on Lesser Slave river. A dredge was at work all fall until ice formed, and it is expected it will continue next spring, to deepen the channel where necessary, so that steamers may go up the rapids, and, without breaking bulk, deliver their load at its destination. If this can be done, it will be a great convenience to those who are obliged to make this journey. The season for surveying being considerably longer than for navigation renders this means of transportation of little value to the surveyor.

A ferry has been put in across the Athabaska river at Athabaska Landing, and a wagon road cut out from the ferry landing to Moose portage, where it connects with the road cut by me in the spring of 1904 to Lesser Slave lake, and from the east end of the lake, a proposed road has been blazed around the north shore, to avoid the boulder strewn beach. This follows the beach, when the travelling is good to Lesser Slave lake, and the Peace river road, so that it will be quite possible to travel by wagon from Edmonton to Dunvegan, without encountering insurmountable difficulties. Those of us who have seen this gradual development look upon the task of getting into the Peace river country now as quite an easy one for light loads. The building of the railroad from Edmonton to the Pacific coast via Sturgeon lake and Grande prairie, the contract for which is reported to have been awarded, will make some difference in the cost of freighting supplies. At present freight costs \$3.25 per 100 lbs. from Edmonton to the west end of Lesser Slave lake, and at the season when roads are bad



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from Sturgeon lake to Lesser Slave lake it costs \$3 per 100 lbs. and the same from Lesser Slave lake to Peace river landing, a distance of about 90 miles over a road on which many thousands of dollars have been spent. The traffic over those roads is largely composed of heavily loaded wagons, which cut into the newly made road of clay from large portions of which the sun's rays are excluded by the dense growth of timber on each side. It is noticed that upon such portions of the road where the sun's influence is felt, the clay hardens, and it is not so easily cut up, once it gets dried out in the spring. Freight rates are regulated by the quantity hauled per team and the time occupied in making the trip; consequently the condition of the road is the prime factor in fixing freight rates, on a dry season the rate being little more than half that on a wet or rainy season. Last summer it took me two and a half days to move my outfit over a road, which when dry can be travelled easily in one day, and both man and beast are in better heart at the end of the shorter period.

Arriving on May 27 at the warehouse near the Hudson's Bay company's post, where my supplies had been cached, I delayed only long enough to check over and re-pile these, get the outfit in order, axes hung and ground, and other needed repairs made, and on the 29th moved into township 75, range 14 west of the fifth meridian. The timber is in belts of quite heavy spruce and poplar, but this is being cut every year and made into lumber, and fire has over run these cut-over areas, leaving them much easier to clear. There is no reason why this land should not be soon occupied, adjoining as it does a large settlement where the timber is required for building purposes, a wagon road cutting across it to shorten the distance around Shaw's point, and the soil being excellent for farming purposes and lying with a gradual descent towards the lake. Although there are no hay lands, except on the west boundary, still hay is found in townships 75 and 76, range 15, which is sufficient for a large population for many years.

Portions of townships 77, ranges 15 and 16, were subdivided because the Peace river road furnishes access to them, and when cleared of the light timber they will make beautiful farms. These sections are well supplied with good water, and the prairie spots seen furnish abundance of hay and vegetation.

Townships 74 and 75, range 15, have large areas of prairie, and several settlers have made small improvements. Wheat, oats, barley, potatoes and other vegetables were grown this year, and although there had been a great deal of injury from frost throughout the Northwest, still very little harm had been done here.

The main roads from Lesser Slave lake to Sturgeon lake pass through these townships, and the timber being small when found alongside of them, they are generally good. No public money has been used to open these roads, but when a little can be obtained for culverts, bridges and draining water holes, settlers will have little difficulty in reaching the objective points, Lesser Slave Lake post office and the half dozen stores, blacksmith shops, churches, &c.

The large number of cattle and horses seen throughout this country, invariably in good condition, goes to prove that, with foresight enough to provide for a severe winter, should it come, stock-raising should be profitable. Township 74, range 14, is composed mainly of timbered land, the trees generally being of small size and not standing very thick. The soil is black loam on clay, and evidences its fertility by the thick growth of grass among the trees and willow bunches. A slight descent towards the north and the climatic influence of a large body of water alongside of it should make this, when cultivated, a fine agricultural area. A wagon road from Lesser Slave Lake post office crosses the lake at a ford near Willow point. This ford permits of a wagon being drawn across empty, a canoe or boat being used to convey the load over. I was informed before leaving this work that the provincial authorities contemplate building a bridge across the lake at this point, which will be a great convenience, and which has now become a necessity. After leaving the ford the



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road follows the beach easterly and southerly, crossing a creek near its mouth, where the water is 75 feet wide and from one to two feet deep, and a smaller creek about a mile farther on, where the water is about a chain wide and nine inches deep, the bottom being good in both cases. Neither of these creeks has much water in it over a mile up from the shore, where in the event of the water of the lake rising and covering the beach a road could be easily made. The width of the creeks being so much less, only small bridges need be built. The road follows the beach, except at a few points where the shore is rough with boulders, easterly to Driftpile Indian reserve, where it runs inland and still easterly to Swan river. Several settlers who have located near the nineteenth base line in range 10 use this road to get to the post office and stores. There is also a wagon road running southerly through township 74, range 14, leaving the lake shore in section 14, which I travelled to the nineteenth base line, and found fairly good that far. It is cut through to Edmonton. At least I was told so by a settler named Beaudry, who drove to that place in October, but on account of having cattle to bring back in November, came around by Athabaska Landing and Lesser Slave river, where he could get hay to feed his cattle. Several parties came into the lake by this road, but all agree that it is very hilly and requires a good deal of fixing, numbers of trees having to be cut out of the way, and it has the further disadvantage of scarcity of feeding grounds for stock.

My operations in the field were concluded on November 8, when the outfit was stored with the Hudson's Bay company, at Lesser Slave lake. Two teams and wagons were engaged to take the party and baggage to Edmonton, going by the north shore of the lake and by the new road to Athabaska Landing, where we arrived on the 21st. The ferry had been taken out of the river to avoid the running ice, so we had to have a York boat put in to cross the teams and wagons. A few days later we arrived in Edmonton, where the party was paid off. I then left for Toronto, where I arrived on December 4.

From the foregoing remarks it will be noted that the country surveyed under your instructions is all suitable for present occupation by the farmer and stockraiser. The settlers will find very little difficulty in reaching any part of it, and the climatic conditions are such that mixed farming can be profitably engaged in provided the seed is grown in the country and is planted as early as it is possible to get it in the ground. The past season was very cold, a great deal of rain fell, and frosty nights occurred every month; still, very little damage to crops was spoken of. The only farmer who had threshed before I left the lake told me his oats weighed 44 pounds to the bushel, and seven acres yielded 600 bushels, and the potatoes on less than an acre returned over \$200.

Drift coal is found in many places on the lake shore and in the main streams, indicating the presence of seams underlying the district, but the quality can scarcely be judged from samples seen.

Rolling stone is found in township 75, range 14, but no rock in place, such as would make a quarry. Many intending settlers have visited the country, some locating and others going out, intending to return when the facilities for getting in are improved, and with the prospect of a railway to carry their produce to market. I met two settlers, who have located at Swan river who told me there were eleven in their party ready to locate now and that in the spring as many more would come to take up land.

The scarcity of game within the territory in which my surveys were made is no doubt caused by the constant movement of the Indians and half-breeds who, with their horses and cattle, are moving about for food, and if a moose or deer happens to stray into the vicinity, it is at once hunted down. Lesser Slave lake whitefish make excellent food. Two years ago they were shipped to the Atlantic coast for the hotel trade and because of their good quality they were called Lake Superior whitefish. Indians catch tons of them for their own use and for dog food in the winter. This was more



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particularly so the past year as the rabbit, the Indian's daily food, is practically extinct. Ducks and geese are plentiful on the lake in the late fall, but there are no feeding grounds about the lake so that only a few remain through the summer.

I have the honour to be, sir,

Your obedient servant,

HENRY W. SELBY, *D.L.S.*



## APPENDIX No. 39.

## REPORT OF C. C. SMITH, D.L.S.

## SURVEYS IN SOUTHWESTERN ALBERTA.

BRAMPTON, ONT., March 9, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR.—I have the honour to submit the following report on the surveys performed by me during the past season in southwestern Alberta.

In accordance with your instructions, I proceeded, on May 1, to Moosejaw, where C. F. Miles, D.L.S., was to deliver over to me the survey outfit used the previous season by Mr. Warren. My outfit arrived in Moosejaw on May 6, and the following day I loaded a car and started to Macleod. On May 10 I arrived in Macleod and proceeded to engage men and complete my outfit. I found very great difficulty in getting good men. However I got a sufficient number of men to begin work with and started on May 13, for township 10, range 29, west of the fourth meridian.

The trail from Macleod to Porcupine hills passes through a splendid ranching country, but along all the coulees were scattered the cattle which had perished during the winter and spring. It was a severe blow to the old method of ranching. The inrush of settlers and the consequent fencing of the ranges is fast driving the ranchers from the prairies. The ranges are becoming small. Twenty years ago, so I was told by the manager of the Walrond, cattle ranged from the Gap in the Livingstone mountains to Macleod, a distance of fifty miles; now they are confined to the land owned by the New Walrond company around Callum creek and Oldman river. The country will in a few years, probably raise more cattle on the farms than were raised on the large ranches, for the cowboy romance and the great spring and fall roundups of the oldtime ranchers, are fast being replaced by the more prosaic but more economical methods of the farmers. In August when I came back over this trail I was astonished at the rapidity of the transformation; many houses had been built, and in many places I had to leave the trail where a wire fence cut it off and follow the fence to the proper road allowance.

Having camped on Five Mile creek I began the subdivision of township 10, range 29, at the northeast corner of section 3. I found that the meridian through this corner had been run so I proceeded to the survey of the remainder of the township. The old surveys in many of the townships in this hilly country seem to be rather irregular. This is due I think to the fact that the surveyors tried to chain accurately by breaking chain. In a very hilly country this is impossible for the ordinary chainman. While at the Crowsnest I lost my clinometer, and while awaiting another, chainmen chained three miles with the utmost care, using a short chain. When my clinometer arrived I chained the three miles (which I had not yet mounded) and found half miles chained with the short chain to be short from 10 to 40 links.

Porcupine hills, an exceedingly rough range, run through the southwesterly part of township 10, range 29. The northerly and easterly parts of the township are well adapted to farming and ranching. Almost every quarter section is well watered by fine spring creeks. The valleys have a fine fertile soil, and grain, roots and vegetables grow and ripen well.



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On June 17, I finished the subdivision of township 10, range 29, and moved over a very rough trail into township 9, range 30. The southerly part of this township is covered by an Indian reserve. I ran the meridians south from the north boundary of the township and ran a random line along the north boundary of the reserve to locate, if possible, the monuments placed in the survey of that boundary. Some of these monuments I could not find and some I found were so far from the places shown in the notes of the survey that I decided to defer the completion of the subdivision until I got further instructions from you.

While at these surveys and at subsequent surveys, I investigated the necessity of subdividing the remaining portions of townships 10 and 11, range 1, west of the fifth meridian. These portions are in Porcupine hills, are generally heavily wooded and at that time there was no urgent necessity for immediate survey of all the remaining portions. However, there are some good coulées running into the hills, and it would seem well to complete the subdivision of the townships when the quarters affected by these coulées are being surveyed. Many excellent homesteads in this district await suitable settlers. There is much good building timber in Porcupine hills, springs of beautiful water are plentiful, the valleys have a deep rich loam that is easily worked and the good creeks in the valleys would furnish easy and inexpensive means of irrigation if that were necessary or desirable. It is very necessary, however, that the government should take some means of preserving the timber.

My next work was in township 10, range 2, west of the fifth meridian. The rougher parts of this township had been left and it was these that I was completing. However, most of it was good grazing and farming land.

Much of township 11, range 2, is cut by very high hills, but along the coulées there is some land well adapted to farming and grazing.

On July 16 I began the survey of the south boundary of township 11, range 3. This line afforded sufficient difficulties to satisfy a surveyor for a whole season. The line crossed Oldman river five times within three miles. The velocity of the current, swollen by the late spring thaw and by summer rains, was such as to prevent our crossing otherwise than by horses.

At the Gap, the south boundary of this township crosses the Livingstone mountains, where it is impossible to climb so we had to run a traverse along the foot of the cliff forming the side of the Gap. On joining the traverse to the southeast boundary of section 6, I found a considerable discrepancy between my distance and the theoretic distance, so in re-running the line I made another traverse through the Gap. This confirmed my previous measurements. While at these surveys we saw a number of seams of good coal. No doubt a railway will soon be constructed to this place, and the country will become very productive. Frequent showers were the only phase of the climate that was at all disagreeable, and these happened almost daily.

At your suggestion I arranged to proceed to the surveys at Crowsnest before the season was too far advanced. We found a good wagon road along the valley of the middle fork through Frank, Blairmore and Coleman as far as the easterly end of Crowsnest lake. From here we had to take an old construction road, which many told us was impassable, to the westerly end of the lake. In townships 7 and 8, ranges 5 and 6, we were engaged in subdivision work, and in running a connecting traverse to the Crowsnest coal area. My experience in the Gap had confirmed my opinion that wherever a man can possibly climb it saves time and is more satisfactory to run the line straight than to traverse; hence, except the east boundary of section 6, township 8, range 5, I ran all the lines straight over the mountains, though it necessitated some very difficult work. In connection with this subdivision, it was necessary to traverse the height of land forming the boundary between British Columbia and Alberta. This was an easy matter where the watershed was narrow and well defined as was generally the case. In one place we found a spring forming a pool from which a stream flowed from the western side down to Michel creek and on to the Pacific, while another little stream flowed from the easterly side down to Crowsnest lake and thence on to the



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Arctic. But in many places the watershed develops into heavily wooded plateaus. In the northerly part of township 8, range 6, there was a basin-shaped area at the watershed. To determine the position of the watershed we had to run many lines of levels. There seems to be a necessity for having the boundary permanently marked. This boundary had evidently been traversed before, and while, so far as I can tell, my traverse agreed with the previous one as to the position of the watershed, there were apparently some small differences and it would be impossible in many places for a settler or prospector to tell upon which side of the boundary he was.

While engaged at this work we had a three days' snowstorm which delayed work somewhat. The snow melted off the trees very slowly and for several days we were drenched to the skin from morning until night with ice cold water. However, afterwards we had ideal weather.

On receiving your telegram instructing me to proceed to the survey of Grassy Lake townsite, I loaded the outfit on a car at Crowsnest and arrived at Grassy Lake on October 19. Grassy Lake is most inappropriately named as there is no lake within miles and at the time we were there very little grass was to be seen. There is, however, plenty of good farming land around, settled for the most part by industrious and progressive Americans from Utah, and there is coal in abundance, so that Grassy Lake seems destined to become a good town. To the north of the Canadian Pacific right-of-way, Messrs. Cherry and Driggs had already opened a large store and were engaged in mining operations. On receipt of your instructions I proceeded to investigate and correct an error in the position of a quarter section post in township 10, range 22, west of the fourth meridian.

The season being now too far advanced to permit my returning to the mountains to complete the work there I arranged for wintering the horses and storing the outfit and paid off my party in Lethbridge.

I have the honour to be, sir,

Your obedient servant,

O. C. SMITH, *D.L.S.*



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## APPENDIX No. 40.

## REPORT OF A. G. STACEY, D.L.S.

SURVEYS IN THE RAILWAY BELT, KAMLOOPS DISTRICT, BRITISH COLUMBIA.

LITTLE BRITAIN, ONT., March 10, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—I have the honour to submit the following general report on my survey operations in the Kamloops district, British Columbia, during the season of 1907.

On April 26, I left Ottawa for Kamloops, British Columbia, where I met Mr. J. E. Ross, D.L.S., with whom I arranged a division of the work lying within the Kamloops district. It was decided that Mr. Ross would undertake the surveys to the east of Kamloops, while I devoted my attention to those townships lying to the west of the city. A week was spent at Kamloops in organizing the party and outfitting for the season's operations. In this task I was most generously assisted by Mr. Ross, who had had considerable experience in the work, and was thoroughly acquainted with local conditions. It was considered advisable not to purchase any transport outfit, but to hire such services as they were required.

On May 13, we left Kamloops, a party of seven, for our first camp on the left bank of Thompson river in township 20, range 18, west of the sixth meridian. Selecting what appeared to be a desirable location, we pitched camp on what afterwards proved to be an island separated from the mainland during high water by a narrow channel which, at that time, was perfectly dry. The water rose so rapidly that in four days' time we were forced to wade the channel through two feet of water and transfer our camp outfit to higher and safer quarters. The work in this township consisted, for the most part, in attempting to locate the boundaries of old provincial lots, and to connect them with the section lines of the Dominion lands system. The results of such work are likely to prove unsatisfactory both to the department and to the surveyor in charge. Where the corners of lots were originally marked with wooden posts and stone monuments they can usually be located with little difficulty; but where the positions were defined only by wooden posts driven a few inches into the ground, it is often impossible to locate the original corners. This is particularly true in the case of lot corners situated within or near the right-of-way of the Canadian Pacific railway. The company seems to have exercised no care whatever in the preservation of survey marks, almost every monument placed in the immediate vicinity of its premises being utterly destroyed, either during the construction days or by fires kindled by the company's employees at various times since then. A most thorough search for the different corners of the various lots mentioned in the instructions was made, and while in several cases the search proved futile, I believe a sufficient number of points have been located to enable the draughtsman to place the lots in their correct positions with reference to the section lines. In any event, the best information that can be gained by a careful survey of the ground has been obtained.

Some of the old section line surveys in the southern part of the township seem to have been very carelessly performed. More retracing of lines affecting the closing of blocks in which we worked could have been made to advantage, though it is diffi-



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cult to estimate where this retracement would cease if satisfactory results are to be obtained. Owing to the number and urgency of other surveys demanding attention, I decided to have further retracements for some later date. The work being located near Kamloops can easily be attended to by Mr. Ross at his convenience.

Quartersection monuments were found on the east boundaries of sections 8 and 9, though the department seems to have no record of such. These may have been located from a traverse of the boundaries of lot 443. They were left undisturbed, the lines joining them with the section corners to the south being retraced in both cases.

We were fortunate in securing the use of a small gasoline launch for crossing and re-crossing the river while at work on the north side.

On the forenoon of May 30 the party, with the addition of another member, moved by launch to Savonas, a small town at the mouth of Kamloops lake. From Savonas a good wagon road leads southward up Threemile creek valley to the divide between Thompson and Nicola rivers, thence, following Guichen creek, leads into Nicola valley. A thirteen mile drive up this road brought us to the crossing of Threemile creek, where we encamped for subdivision work in township 19, range 21. In this township some heavy timber was encountered, especially in the eastern tier of sections, where the progress of the work suffered for want of additional axemen. I endeavoured, my mail, to secure temporarily the services of two more men, but the effort was unavailing. In consequence, the survey of 26 miles of section lines and four miles of traverse kept us employed continuously from May 31 to July 17. The elevation here is about 4,000 feet above sea level; the nights were invariably cool, and the not too excessive heat of the day was relieved by frequent thunderstorms. The location is, in many respects, ideal for the prosecution of survey work during mid-summer months.

From this plateau we moved to the southern shore of Kamloops lake about three miles west of Cherry Creek station in township 20, range 20. After running a few miles of section lines and locating such corners of lots 407 and 417 as could be found, we proceeded to make certain check and triangulation surveys in the vicinity of Kamloops lake, in accordance with instructions under date of June 3, 1907. The disagreement between the surveys on the opposite shores of the lake was pretty thoroughly checked by means of five distinct triangulations and a number of connecting traverses joining together the different surveys made along the northern shore. Through these ranges telegraph poles were used almost exclusively as reference marks for Canadian Pacific traverse stations, and as the original poles have long since been replaced by new ones the stations are lost. Finding it impossible to tie the surveys to Canadian Pacific traverse stations, connection was made with section and quarter section monuments near the railway, many of which were doubtless established directly from Canadian Pacific traverse stations. Near the township line between ranges 20 and 21 a pine tree used as a reference mark, for a Canadian Pacific traverse station, was noted and the survey tied thereto.

The results of this work indicate that throughout range 19 and the eastern half of range 20 the monuments on the north side of the lake are approximately 3 chains too far south, while those in the western half of range 20 are approximately 6 chains too far north. An error was found in the position of the monument marking the northeast corner of section 27 in township 20, range 19. It is 1.71 chains too far north to agree with the positions of the monuments immediately to the west and was found by Mr. Ross to be about 2.50 chains too far north to correspond with the positions of the monuments to the east. Another error was located in retracing the survey lines about the southeast quarter of section 14 in township 21, range 21. The west boundary of this quarter section was found to be one chain short and the north boundary 2.73 chains short of the theoretical lengths. These errors were corrected, new monuments erected and section lines run connecting this survey with that in range



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20. With the exception of these errors, the old survey lines on the northern shore of the lake would seem, from the retracement, to have been surveyed with unusual accuracy both as to alignment and measurement. Unfortunately the opposite seems to have been the case with many of the early surveys made along the southern shore.

For this work we hired the use of a fairly good skiff, which proved a great convenience in travelling to and from camp while working along the northern shore, where the surface of the country is extremely rough. For crossing the lake a boat of some kind was a necessity. Though we shifted camp no less than three times we were frequently obliged to work at considerable distance from headquarters, entailing much loss of time and energy. This, however, seemed unavoidable owing to the scattered and irregular nature of the surveys. The members of the party seemed less concerned with the hardships and inconvenience of the situation than with the danger constantly occasioned by the presence of the deadly rattlesnake. Fortunately none of the party were bitten though a number of these reptiles were encountered.

In making the survey of section 36, township 20, range 22 a quarter section monument of which the department had apparently no record, was discovered on the east boundary of section 35. It was presumably established from the Canadian Pacific traverse survey. The monument was renewed and the section line extended therefrom. The old witness monument on the east boundary of section 36 being lost, a new one was erected.

On August 27 we made our first move by rail, from Savonas to Semlin, a railway siding in township 21, range 23. There being no trail on the south side of the river it was impossible to secure a conveyance for transferring the outfit and supplies to the nearest camping ground on the bank of the river about one-third of a mile distant. It was therefore necessary to resort to the laborious process of packing the entire outfit on our backs; an interesting experience repeated some eleven days later when again breaking camp. In this township an old witness post and cairn were found near the northeast corner of section 11 on the left bank of Thompson river. The post had no distance marked on it. As this corner was also witnessed by a monument on the right bank of the river it seemed a case of duplicate marking for the same corner. Some subdivision surveys having been made on the north side I decided to destroy the witness monument placed on the south side and leave the corner as located from the north in agreement with these surveys. There is no crossing of the river in this vicinity, so a member of the party was sent around by way of Ashcroft to locate this witness monument, but failed to find any trace of it. The corner was consequently re-established from the witness monument marking the quarter section corner on the east boundary of section 14. Upon producing southward the section line thus defined another monument was found for the quarter section corner on the east boundary of section 11. This I also destroyed and erected a new one in agreement with the monuments established on the section line farther north. The northeast corner of section 6 was also re-established from the north, the original monument having been destroyed. A wooden post and stone mound was found marking the northeast corner of township 20, range 24. Though its position does not agree with the surveys in township 21, range 23, the monument was left undisturbed, and the line joining it to the quarter section monument to the north was retraced. The lands affected by this disagreement are not very valuable and hence there is no urgent need for readjustment.

From the various cases cited above, it would seem that a considerable number of section and quarter section corners, convenient to the railway, were established some years ago, probably from Canadian Pacific traverse stations, but that no record of such monuments was furnished the department. When in the extension of the subdivision surveys, these unrecorded monuments are met with, the surveyor must either recognize them and leave all the discrepancies of the survey in the closing or destroy the monuments and erect new ones in accordance with his own survey. The surveyor must, in each case, after carefully considering local conditions, depend upon his own judgment



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in deciding which course he is to pursue. Complications are apt to arise in the case of witness monuments for corners falling within the bed of the river, as the surveyor making the subdivision on the north side of the river is not likely to discover witness monuments placed on the south side, and hence duplicate markings result.

After travelling by train to Ashcroft and making the surveys required in township 20, range 24, we moved to township 29, range 23, and made sufficient subdivision surveys to cover all the desirable land in that township. The road leading from Ashcroft to this plateau is very winding with an exceedingly heavy grade. Despite the fact that the roadbed was hard and smooth, four good horses found difficulty in hauling up the outfit, the outfit weighing probably less than a ton.

On September 26 we moved into Ashcroft, purchased additional supplies and the same day drove seventeen miles up the Cariboo trail to the correction line between townships 22 and 23, in range 25. In performing the surveys required in these townships, we were careful to connect with the corners of all lots and surveyed mineral claims affecting the lands being surveyed. It is possible that in one or two cases connecting traverses were made which were not absolutely necessary, but in the absence of positive information that such work had previously been performed by another surveyor, it was deemed advisable to make the connections. In most cases, where section lines intersected the boundaries of lots and surveyed mining locations, monuments were placed at the intersections. The work in township 23 brought us within one mile of the limit of the railway belt. We produced the section line another mile and placed a monument on the limit which is not surveyed through this township.

The work in township 22, range 26, was attended to next. While camped there three of the party made a flying camp to township 20, range 26, up the Hat creek road and connected lot 1072 with the Dominion lands system. In order to furnish the agent of Dominion lands with some additional information concerning this lot, I retraced all the boundaries thereof and made complete topographical notes of the adjacent lands and improvements.

On October 31 we moved by wagon into Ashcroft and secured transportation to Spence bridge on the first local freight passing southward. The same evening we moved across the river and some three miles up country, where we were generously accorded the use of a vacant house while working in township 17, range 25.

The branch line of the Canadian Pacific railway up the Nicola valley afforded easy means of transportation to township 15, range 23. The wooden post placed at the southeast corner of lot 566 in this township has been washed away by Nicola river, which at that point has encroached considerably upon the lands situated on the right bank. Connection was made with bearing trees at the northeast corner of this lot, with other lots previously connected with lot 566 and with the northeast corner of the Lower Nicola Indian reserve, number 10.

In order to reach the Skuhun creek valley we ran east across the north boundary of section 10, thence due north three miles over the divide between Nicola river and Skuhun creek valleys. At this point the divide reaches an altitude of 2,500 feet above Nicola river and the ascent from either valley is steep and difficult, though fortunately no inaccessible barriers were encountered. A squatter in section 26 has constructed a wagon road from the mouth of Skuhun creek to within two miles of his cabin. By travelling down the Nicola valley to the Indian village at the mouth of the creek and following this newly constructed road up the valley, the outfit was brought by wagon to our new camping ground in section 27. In this valley section lines were run west as far as the Indian reserve and north and east to the limit of the railway belt effecting a closing at the northeast corner of section 1, in township 16, range 22. For the completion of this work one more camp shift was necessary, and for the first time during the season's operations pack-horses were employed. It was intended, while in this valley, to extend the surveys so as to include some meadows lying approximately in sections 34 and 35, township 15, range 22, but owing to the scarcity of provisions in stock, the severity of the weather, the depth of the snow and the difficulty experienced



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in securing pack-horses under such unfavourable conditions, we were unable to do so. The elevation here is about 7,000 feet, above sea level, the snow was already fifteen inches deep and the weather decidedly cold. In the entire valley there are but two settlers located, neither of whom has made improvements of much value. It would seem, therefore, that further surveys are not particularly urgent, especially as the land best suited for settlement lies six miles beyond the upper termination of the wagon road, the only means of access being an Indian pack trail. From the section lines established subdivision lines can be projected as required to meet future demands.

On December 19, an Indian packing outfit brought the party down the Skuhun Creek valley to Clapperton, a station on the Nicola branch of the Canadian Pacific railway where we boarded the local train for Spence Bridge the same evening. Here the party was discharged with the exception of the assistant who accompanied me to Lytton on the following day, where I met the agent of Dominion lands and discussed with him the surveys to be made at that point. The work in Lytton was completed on the evening of December 25. The next morning we reached Kamloops, where the assistant was released, the outfit stored and all necessary arrangements completed for the closing of the season's field operations.

In the performance of the season's work every reasonable precaution to secure accuracy was observed. The alignment was checked by frequent astronomical observations and the measurements carefully rechecked except in a few cases of closed surveys where no further check was considered necessary. In the early part of the season solar observations were used exclusively. During the long days in June satisfactory stellar observations, with a glass diaphragm, could not be obtained until late in the afternoon, and as camp was usually some miles distant the solar observations were more convenient. During the latter part of the season observations were made on polaris. A sidereal watch, corrected by observing the transit of time stars, was used for noting the time. As a rule, at least two observations were taken at each observation station to guard against possible errors in recording vernier readings. The measurements were made with a five-chain steel tape and a clinometer.

The surveys were scattered and irregular, constantly necessitating the starting of new lines. Old surveys had to be connected or retraced, doubtful monuments investigated, fresh obstacles due to the mountainous character of the country almost daily surmounted, in all of which the closest personal supervision of the surveyor was required. The valley lands, being the most valuable, were surveyed many years ago and the lines gradually extended up the hillsides, with the result that the surveyor has now to climb to an elevation varying from 500 to 2,000 feet above the camp in the valley in order to reach the lines he is projecting. The devotee of the strenuous life need seek no more congenial field than that enjoyed by the surveyor in charge of a party performing miscellaneous surveys in the Kamloops district.

All necessary supplies can be secured at any of the small towns along the railway, though the cost of provisions and camp equipage is much greater here than at either Vancouver or Winnipeg. This financial disadvantage to the surveyor is, to a certain extent, compensated for in the enjoyment of a fairly good mail service and other conveniences consequent upon the proximity of the railway, so often denied other members of the fraternity in the pursuit of their profession.

The city of Kamloops with a population of about 2,500 is the most important centre in this district. It is a progressive little city operating its own water works and electric lighting systems. As a divisional point of the Canadian Pacific railway and a distributing centre for the north Thompson valley and the ranching country to the south it is the scene of considerable commercial activity. A court house, provincial asylum and hospital are located here. Ashcroft, a town of five hundred inhabitants, is the gateway of the Cariboo country to the north. From here great freight wagons drawn by eight and ten-horse teams and laden with tons of supplies leave for



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their tedious journey of two hundred and fifty miles into the interior. A splendid stage service with headquarters at Ashcroft forwards the mail and provides accommodation for the travelling public. This busy little town is supported partly by the forwarding industry, though there is also a considerable local trade. Savonas and Spence Bridge are small railway towns forming supply stations for sparsely settled ranching districts.

This district boasts of a delightful climate. After traversing nearly one thousand miles of bleak, frozen prairie with scarcely a green blade to give promise of the approaching spring we were ushered through the gate of the Rocky mountains, past the magnificent scenery of the Selkirk range and down the western slope into the smiling valleys of the interior, already richly clothed in nature's verdant garb. Vegetation here is several weeks in advance of that in either Ontario or the prairie provinces. The long summer season is usually very dry and the air clear and invigorating especially in the Thompson river valley, which is becoming a favourite health resort for sufferers from pulmonary trouble. The autumn weather is ideal, warm, bright and cool, cloudless nights following each other with almost monotonous regularity throughout the greater part of the season. The winters are short and cold with a light snowfall in the valleys. Peach orchards, vineyards, &c., rarely suffer from the severity of the climate. Leaving the river valleys and ascending the hills a gradual yet very preceptible change in climate is experienced. As the elevation increases, the temperature lowers, summer frosts become frequent, rendering the cultivation of vegetables and cereals impossible, the precipitation increases and the winters lengthen.

In the valleys of the Thompson river and of its larger tributaries, Bonaparte and Nicola rivers, the country is largely prairie dotted with small scattered pine and fir. The nutritious bunch grass, which at one time covered these ranges, furnishing ideal pasturage, has disappeared and in its stead flourishes, in many places, the worthless and unsightly sage brush. The sparse growth of other grasses gives the country a somewhat barren appearance, though herds feeding on these grounds look remarkably well. Where irrigation is employed, the soil proves very productive. Back from the valleys the hills furnish good grazing lands for the summer months. Though there are open patches on some of the plateaus, the country is mostly covered with a forest of bullpine and fir. The former makes very good lumber for ordinary uses. The latter is largely manufactured into square timber, being strong and durable, though it does not produce a good quality of lumber. Many of these forests would be valuable lumbering centres, were it not for the difficulty of getting the logs to some navigable stream. Sawmills are at present in operation at both Kamloops and Savonas, though the lumbering industry has not assumed very large proportions in this district. Some of the plateaus are covered with banksian pine which is of little value, except for fuel. These forests support a luxuriant growth of grass and are usually free from underbrush. The cattle, however, much prefer the shorter grass of the more open patches and resort to the timber pastures only when the other fails or the weather proves too severe in the open. The lakes on these plateaus are almost invariably alkaline, though fresh water of excellent quality is found in almost every stream. Cattle ranching has been, and still is, the chief industry. Such rich bottom lands as could be easily irrigated were secured by early settlers engaged in this industry. These holdings yield two crops of hay during a season, furnishing winter provender for herds which, during the summer months, roam at will over the neighbouring hills.

Another industry of some promise, attracting increasing interest during recent years, is the cultivation of fruits and vegetables. In various places throughout the valley of Thompson river small areas have already been given over to the cultivation of these products, with most gratifying results. The character of the climate, combined with the richness of the soil, when properly irrigated, furnishes a product absolutely unexcelled in quality. Exhibitors from this valley have carried off the highest awards at international exhibitions on both sides of the Atlantic. An excellent home market



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for these products helps to make the industry a very profitable one. The returns from this kind of farming are so great in comparison with the returns being at present realized that the early abandonment of cattle ranching in favour of the cultivation of fruits and vegetables seems inevitable. This would provide accommodation for a much greater population than the valley now supports, and would undoubtedly have the effect of directing more immigration to these parts. Promoters of this industry are already securing possession of some of the most valuable holdings. Meadows in higher altitudes could be utilized by those engaged in cattle ranching, so that this industry need suffer little more than the inconvenience of being driven farther from the railway.

This district is undoubtedly rich in minerals, though the mines have been little developed as yet. Low grade ores predominate. Capital is required both for the working of the mines and the erection of smelters for treating the ores. Copper is the mineral most in evidence.

Good government roads have been constructed through the valleys of the different tributaries of Thompson river. Heavy grades are often unavoidable, but the roadbed is usually solid and kept in good repair. In early summer, many of these highways, following the innumerable windings of the picturesque mountain streams as they noisily tumble from their dizzy sources to the stately river below, through valleys rich in scenic grandeur and heavy with the perfume of wild roses blooming in gorgeous profusion on every hand, are beautiful beyond description.

One of the noticeable features of the Pacific province is the cosmopolitan character of its inhabitants. Chinese, Japanese, Hindoos, native Siwashes, English immigrants and Canadian bred citizens, constitute the chief elements in this confusion of races. Institutions sacredly guarded in eastern Canada receive little consideration from many of these people. The problem of the unassimilative elements is everywhere confronted and has already become the peculiar possession of the western statesmen.

In conclusion I wish to express my appreciation of the splendid services rendered the party by my assistant, Orville Rolfson, B.A.Sc., of Walkerville, Ontario, and by W. G. McElhannon, B.A., of Vancouver, B.C., who served in the capacity of articled pupil.

I have the honour to be, sir,  
Your obedient servant,

A. G. STACEY, D.L.S.



## APPENDIX No. 41.

## REPORT OF W. THIBAudeau, C.E.

## INVESTIGATION OF WATER POWER ON WINNIPEG RIVER.

OTTAWA, March 24, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

SIR,—In accordance with your instructions, dated July 29, 1907, re preliminary investigation of the water-powers on Winnipeg river, Manitoba, from lake Winnipeg to the western boundary of Ontario, I have the honour to submit my report thereon, including the first falls of English river in Keewatin and the first rapid on Winnipeg river across the eastern boundary of Manitoba. The extent of watershed, the area drained by this river, and the extent and description of the natural resources tributary thereto, are also included.

## DESCRIPTION OF RIVER.

Winnipeg river has its source in the lake of the Woods, Ontario, a distance of about fifty miles along the river from the western boundary of the province of Ontario. The lake has an area of over 1,200 square miles, and is controlled at Kenora by a dam twenty feet high. The river has a drainage basin of 52,050 square miles, of which 21,650 square miles is contributed by English river. Its length is about one hundred and fifty miles and it has a descent of about three hundred and fifteen feet. From its mouth to the east boundary of Manitoba, a distance of about one hundred miles, the descent is two hundred and sixty-four feet or about 2.64 feet per mile. This descent is concentrated at many places, producing a large number of valuable water-powers. From the east boundary of Manitoba, the river flows northwesterly to Lamprey falls, where it turns abruptly in a southeasterly direction to Sturgeon falls. From this point it runs westerly to Whitemouth river, thence northerly to Whitemud falls, and from this last point northwesterly to lake Winnipeg. From Kenora, at the point where the lake of the Woods joins Winnipeg river, to lake Winnipeg, the river flows through a formation of bare granite gneiss of a red colour, well polished by glacial action. The river is practically a succession of inland lakes varying in width from one-third of a mile to one and one-half miles. The average depth is thirty to forty feet. In no place did I find bottom at less than fourteen feet.



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RAINFALL AND RUN-OFF—ANNUAL PRECIPITATION.

Years.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
<i>Stations.</i>												
Winnipeg . . . . .	26 29	17 59	27 19	19 82	18 58	23 90	18 49	23 30	22 53	25 26	22 41	23 76
Port Arthur . . . . .	21 48	24 51	20 14	26 53	27 10	23 95	18 49	23 30	22 53	25 26	22 41	23 76
Kenora . . . . .								45,100	44,500	49,000	44,300	47,000
Winnipeg river drainage basin . . . . .	23 88	21 05	23 66	23 17	22 84	23 92	36,600	36,600	35,100	38,700	35,000	37,000
Precipitation, ft. second . . . . .	47,500	42,000	47,000	45,000	43,400	47,500	29,000					
Average run off . . . . .	37,500	33,200	37,000	35,500	34,700	37,500						



In the wider parts of the river, or lake portions, there are numerous small islands having abundant verdure. The principal growth along the river banks is poplar and spruce, while the same growth is found on the flats. Where the shore is rocky the growth consists of jackpine and some white birch. At Fourmile Portage island is a small grove of white pine. From a few miles above Islington to Lake Winnipeg there are a few oak, elm and white birch. The forest on both sides of the river has an undergrowth of thick hazel and willow underbrush, while the country on both sides as far as Sturgeon Falls is rough; rocky knolls and ridges are numerous, averaging from fifty to one hundred feet high, interspersed with swamps and small lakes. From there to the head of Seven rapids the roughness of the country gives place to a plateau-like country overlaid with yellow loam, which extends to lake Winnipeg.

The water at Winnipeg river is of a clear, dark colour, although it drains a territory a great part of which is muskeg and swamp. The water contains no perceptible vegetable matter in suspension. The clearness of the water, I think, is due to the fact that it passes through so many lakes which operate as settling basins. In very few places are grass and weeds seen growing along the shore, or in the water.

The river in places is well stocked with fish; pike, sturgeon and whitefish abound, and there are some salmon trout. In December tracks of moose, caribou, otter, mink and marten were seen, and in the upper part of the river wolves and foxes were heard.

About six miles down the river from the Ontario boundary, the Hudson's Bay company have a post on the west bank, which they use during a portion of the year for trading purposes.

At Pointe du Bois falls on the west side, the Winnipeg City Power company have cleared a space for a power house site and erected several log buildings for the use of their men. At the head of Pinawa channel, and at the diversion weir, the Winnipeg Street Electric Railway company have large camps.

The first farm seen from the boundary is at the mouth of Whitemouth river on the west side. From there, beginning at a point three or four miles farther down, small farms are scattered along the river on both sides to the south of Lac du Bonnet. Lac du Bonnet station is the Canadian Pacific terminal of the Lac du Bonnet branch; the population of this place is about two hundred, mostly employed cutting cordwood in winter, and in summer working in the brick-yards and sawmills. There is an Anglican and a Roman Catholic church and a public school. At the Grand du Bonnet falls some clearing has been done and a large log building has been erected as a camp.

The next settlement is at the foot of Silver falls and extends on both sides of the river to Fort Alexander at lake Winnipeg; considerable farming is done in this settlement.

#### FARMING LAND.

From the Ontario boundary to Sturgeon falls farming land is found only in spots and from there to Seven rapids, there is slightly more of it; from there to Lake Winnipeg along the river, the land is fair farming land overlaid with yellow loam.

#### MINERALS.

About five miles down the river from the Ontario boundary to Pointe du Bois I found in several places white mica with cleavage two or three inches square, but no other mineral. The red granite referred to makes a fine building stone and in many places blocks of large size could be quarried.

#### MERCHANTABLE TIMBER.

Very little timber was seen. It consists of spruce, balsam and tamarack and is suitable only for pulpwood.



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## PULPWOOD.

The drainage basin of Winnipeg river in Manitoba, exclusive of ten miles on both sides of the Canadian Pacific railway right-of-way, and exclusive of the farming lands, has an area of about 1,840 square miles, which, added to the drainage basin of English river, in Keewatin, which joins Winnipeg river east of the boundary and covers an area of 9,500 square miles, forms a total of 11,340 square miles. Assuming about half this area to be covered by rivers, lakes and swamps, the balance 5,670 square miles or 3,628,800 acres is forest, averaging twenty cords to the acre, this equals 72,576,000 cords of pulpwood, which is a conservative estimate. Assuming this to be equal to a supply for twenty years, it would allow a consumption of 3,628,800 cords per year or about 3,000,000 tons of pulp, or 9,615 tons per day, which would require about 500,000 horsepower to convert it into pulp.

Within the area alluded to the proportion of pulpwood from my own observations and information gathered from many sources is about as follows: poplar, 55 per cent spruce; balsam and tamarack, 25 per cent; jackpine and a few white birch, 20 per cent. Poplar is found mostly along the rivers and lakes on the flats. As one goes inland spruce, balsam and tamarack, take the place of poplar. Jackpine is found on rocky ridges. The present size of the timber is a growth of about twenty years.

Outside the pulp area already described, but tributary to Winnipeg and English rivers in Ontario, there are 12,000 to 15,000 square miles of the same kind of wood, existing under the same conditions, and which would average about the same per acre.

To preserve the pulpwood industry it is imperative that stringent regulations should be adopted and enforced prohibiting the cutting of trees under a certain size, say three inches in diameter. The owner of the timber berth should not be allowed to cut over the same area twice in twenty years, except in special cases.

I saw only two places where the timber had been destroyed by fire.

Although the country is rough it would be easy to construct a railway logging road at a reasonable cost. Logging with teams would have to be done in winter owing to the swampy character of a portion of the ground.

## WATER-POWER.

By controlling the water-power at Kenora, the minimum efficiency of the water-power of Winnipeg river would be increased from 2,200 horsepower per foot fall to 4,080 horsepower per foot fall.

Lake of the Woods has a storage area of over 1,200 square miles by twenty feet deep or 21,172 foot-seconds the year round, or 2,340 horsepower per foot fall per day the year round. The lake is controlled at Kenora by a dam. The average run-off of Lake of the Woods, Rainy river and lake drainage basin is about 22,000 foot seconds.

The storage of the Lake of the Woods would contain about 70 per cent of the yearly run-off, taking the year 1902 as the lowest for the last eleven years, or nearly double the minimum flow of Winnipeg river, 36,000 foot-seconds, 4,080 horsepower the year around per foot fall. This demonstrates the immense importance of controlling the water at Kenora dam for the future development of the water-powers of Winnipeg river.

## THE IMPORTANCE OF WINNIPEG WATER-POWERS COMPARED WITH NIAGARA FALLS.

Winnipeg river has 264 feet descent from the Ontario boundary to lake Winnipeg; with the control dam at Kenora 247 feet descent is available for water-power, yielding 903,300 minimum horsepower which could be utilized, and without the control dam at Kenora, 486,800 minimum horsepower which could be utilized. Compared



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with Niagara falls which has a minimum of 2,600,000 horsepower, of which 80 per cent is on the Canadian side, the water-powers of Winnipeg river would be as follows: with the control dam at Kenora, forty-three per cent of Niagara falls on the Canadian side, and without the control dam twenty-three per cent.

#### WATER-POWER AND COAL.

A coal consumption per indicated horsepower for condensing engine would be one and one-half pounds per hour as minimum consumption, under test conditions, with the most efficient machinery under favourable conditions. On this basis the consumption of coal per horsepower per day would be thirty-six pounds or six and one-half tons per year. Winnipeg river water-power with the control of Kenora dam is the equivalent of coal consumption of 5,871,450 tons a year which would be required to generate the same power, without the control of the Kenora dam, the water-power would be the equivalent of a coal consumption of 3,564,200 tons a year.

The quantity of coal required to produce power equal to the water-power of Winnipeg river, with and without control of Kenora dam conveys an idea, not only of the value of the water-powers of Winnipeg river, but also the desirability of controlling Kenora dam.

#### WINNIPEG POWER PLANT.

Upon Winnipeg river at Pointe du Bois falls the City of Winnipeg Power department are about to construct a large power plant. They have cleared a portion of the site and built some workmen's log houses. To assist in the installation of the plant they are building a railway from Lac du Bonnet station to Pointe du Bois. The rails are already laid from the Canadian Pacific railway station to the crossing about two and one-half miles, and that part of the line has been ballasted. From Winnipeg river to Pinawa channel the grading is nearly completed, except for a couple of small rock cuts. From Pinawa channel to Pointe du Bois, about half the clearing, grading and rock cutting has been done. In December they were building crib piers filled with stone for their bridge over Winnipeg river.

#### PINAWA CHANNEL.

The Winnipeg Street Railway and Power company have accomplished a large amount of rock cutting from the head of Pinawa channel for a distance of about four miles, their diversion weir raised the water about six feet. On the north channel the weir is a crib dam and on the south channel a loose rock dam. The spillway and control dam are substantially constructed of cement masonry. The generating station (20,000 H.P.) has a foundation of cement masonry, the upper part being of brick. It is solidly built and is of a permanent character. The dam is also a solid structure of cement masonry. Half a dozen good brick houses, each with stone foundations, have been built. All the stone used is pink coloured granite, and was quarried in the vicinity, while the brick was obtained from the Lac du Bonnet brickyard.

At the Winnipeg City Power tramway crossing, there have been two big rock cuts to improve the channel to dispose of the tail-race water. The trouble with tail-race arises, I think, in consequence of the channel being of rock and not overlaid so deep with sediment as expected.

It was contemplated at first that the great quantity of water passing out would scour the channel, but for the reasons given this was not the case. The dam has since been raised 30 inches with square timber, and this should greatly facilitate the passing off of the tail-race water. The quantity of water passing through Pinawa channel at the power house at the different times I have been there was about 7,500 to 8,000 foot-



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seconds, which is about equal to twenty-seven per cent of the minimum flow of Winnipeg river.

The transmission line from the power plant at Winnipeg is carried on steel towers of first class workmanship.

## WATER-POWER OF FALLS.

The first fall on English river has a descent of 8.74 feet. The minimum flow is estimated at 8,310 foot-seconds or 1,012 horsepower per foot fall. It is practical to build a dam ten to twelve feet high. I do not know whether it would flood the Indian reserve on Loneman lake. Minimum horsepower, 8,845.

The first fall or rapids on Winnipeg river is about two and one-half miles east of the boundary of Manitoba. It has a 4.04 foot descent and is of no commercial importance. A dam built eight to ten feet high would flood the best grazing and hay land of Islington Indian reserve. The river is divided in three channels, one of them would have to be dammed about three miles from the main channel. Minimum flow estimated at 19,400 feet per second; minimum horsepower, 8,888

## LAMPREY FALLS.

This falls is situated on section 24, township 16, range 15, east of principal meridian. It has a descent of 14.26 feet. The water could not be raised higher than six feet without flooding the Islington Indian reserve. The length of dam is 1,350 feet on rock bottom abutment. Minimum horsepower, 31,372.

## POINTE DU BOIS FALLS.

This falls situated on section 36, township 15, range 14, has a descent of 31.63 feet. A dam could not be built without destroying a part of Lamprey falls. I would suggest building a dam to raise the water 23.28 feet. This would obliterate Lamprey and Boundary falls. Minimum horsepower, 69,586.

## EIGHT-FOOT FALLS.

This falls situated on section 25, township 15, range 14 and section 30, township 15, range 15, has a descent of 8.30 feet. Minimum horsepower, 18,260. The water could not be raised without interfering with Pointe du Bois falls. As it stands it could be utilized cheaply.

## SLAVE FALLS.

Slave falls is situated on sections 1, 2, 11 and 12 township 15, range 14. It has a descent of 17.39 feet, minimum horsepower 40,018. In building a dam the water could be easily diverted on the west side where there is a fine millsite.

## STURGEON FALLS.

Sturgeon falls is situated on section 8, township 14, range 4. It has a descent of 4.35 feet, minimum horsepower 9,570. The water could not be raised without interfering with Slave fall.

## OTTER FALL.

This fall situated on section 7, township 14, range 13, has a descent of 1.10 feet, minimum horsepower, 2,420. This fall used to be five or six feet high, but has been reduced to the present height owing to the diversion weir built below Pinawa channel.



## DIVERSION WEIR.

The diversion weir is situated below Pinawa channel has a descent of 6.10 feet. It is built in two channels, on the north channel cribwork, on the south channel loose rock work, of no commercial value to generate power.

## UPPER SEVEN RAPIDS FALLS.

This fall is situated on section 36, township 13, range 11 and section 31, township 13, range 12 at the bay, descent 23.13 feet; minimum horsepower 50,886. It is practicable to build a dam to divert the water on the east side, where on the bay there is an ideal millsite.

## NO. 1 MCARTHUR FALL.

No. 1 McArthur fall is situated at the outlet of Lac du Bonnet, on sections 27 and 35, township 16, range 11. It has a descent of 6.95 feet minimum horsepower, 15,312.

## NO. 2 MCARTHUR FALL.

No. 2 McArthur fall is situated on sections 34 and 35 township 16, range 11. It has a descent of 6.81 feet, minimum horsepower, 14,982. On the two channels it is practicable to build dams to raise the water to the ordinary level of Lac du Bonnet.

## GRAND DU BONNET FALLS.

This fall situated on sections 14, 15 and 22 township 17, range 11 has a descent of 34.69 feet, minimum horsepower 74998. It is practicable to build a dam on the two channels about 730 feet long to divert the water on the northwest side where there is a good millsite.

## FALL.

This fall situated on section 27, township 17, range 11, has a descent of 8.86 feet, minimum horsepower, 19,492. It is not practicable to raise the water without interfering with Grand du Bonnet fall, but it could be economically used in its present condition.

## WHITEMUD FALLS.

Whitemud falls situated on sections 29, 30, 31 and 32, township 17, range 11 has a descent of 12.19 feet, minimum horsepower 26,818. It is practicable to build a dam and divert the water on the east side where there is a good millsite.

## SILVER FALLS.

Silver falls is situated on section 1, township 18, range 10. It has a descent of 22.72 feet. Minimum horsepower, 49,984. It is practicable to build a dam to divert water on both sides.

## PINE FALL.

This fall, situated on section 29, township 18, range 10, has a descent of 7.79 feet, minimum horsepower 17,138. It is practicable to build a dam and divert the water through the old mill race.

Inasmuch as the water-powers in some cases occur within a short distance of each other, I suggest that the power should be concentrated as much as possible, which can



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be accomplished without any loss of power. The distance between any two water-powers would be navigable for vessels drawing ten feet of water. The horsepower given below is based on an assumed minimum flow of 19,400 feet of water per second.

1. Pointe du Bois falls are situated on section 36, township 15, range 14. A dam should be built to raise the water 23.28 feet. This would give a descent of 54.91 feet, minimum horsepower, 120,802. This dam should be about seven hundred and twenty feet long, and would be intersected by two rocky islands the bottom and abutment would be on solid granite foundation. The water should be diverted on the west side where there is a good millsite. Very little rock excavation would be required but some filling on the east side of the channel might be necessary.

## SLAVE FALLS.

2. Slave falls is situated on sections 1, 2, 11 and 12, township 15, range 14. A dam should be built to raise the water 8.19 feet. This would give a descent of 25.58 feet. Minimum horsepower, 56,276. This dam should be about three hundred and fifty feet long. The bottom and abutment would be on bare solid granite foundation. This dam would obliterate the eight foot fall. The water should be diverted on the west side, where there is a good millsite. Little rock excavation would be required on the canal.

## UPPER SEVEN RAPIDS FALLS.

3. This falls is situated on section 31, township 13, range 12 and section 36, township 13, range 11. The dam should be built to raise the water 15.57 feet, which would give a descent of 39.40 feet. Minimum horsepower at the bay, 50,039. On the upper and lower Seven Rapids falls the amount of water going through Pinawa channel, or 8,000-foot seconds, has been deducted. This dam should be about four hundred feet long, the bottom and abutment being on bare solid granite formation. This dam would obliterate Otter and Sturgeon falls. The water should be diverted on the southeastern side to the bay where there is an ideal millsite. Little or no rock cutting would be required on the channel.

## LOWER SEVEN RAPIDS FALLS.

4. This fall is situated on sections 26, 27, 33, 34 and 35, township 13, range 11; from the head of Second falls below the bay at Upper Seven rapids a dam should be built to raise the water seven feet. This would give a descent of 24.60 feet, minimum horse-power 31,807. This dam should be about 930 feet long and would be intersected by two rocky islands. The bottom and abutment would be on solid bare granite formation. There is a good millsite on the northeastern side, which I think would be the best side to divert the water.

## GRAND DU BONNET FALLS

5. Grand du Bonnet falls is situated on sections 14, 15, 22 and 23, township 17, range 11. A dam should be built to raise the water fourteen feet. This would give a descent of 48.09 feet, minimum horsepower, 105,798. The dam would require to be about 795 feet long, and would be intersected by one island. The bottom and abutments would be on solid bare granite. The water should be diverted on the north-westerly side where there is a good millsite. A considerable amount of rock cutting would be required on the channel. This dam would obliterate McArthur 1 and 2 falls and would raise the water to the general level of Lac du Bonnet.

## SILVER FALLS.

6. Silver falls is situated on sections 1, 2, 11 and 12, township 18, range 10. A dam should be built to raise the water 20.90 feet. This would give a descent of



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43.62 feet,—minimum horsepower, 95,964. The dam would require to be about 800 feet long and would be intersected by one rocky island. The bottom and abutment would be on solid granite formation. This dam would obliterate Whitemud fall and the fall below Grand du Bonnet falls. The water could be diverted on either side.

#### PINE FALLS.

7. Pine falls is situated on section 29, township 18, range 10. A dam should be built to raise the water 4.08 feet. This would give a descent of 11.87 feet, minimum horse-power 26,114. This dam would require to be about 860 feet long. The bottom and abutment would be on solid bare granite formation. The water should be diverted on the southern side along the old mill-race, where there is a good mill-site.

#### FIRST FALL ON ENGLISH RIVER.

8. The first fall on English river is situated about ten miles up from its junction with Winnipeg river. It has a descent of 8.6 feet. It would be safe to raise the water by a dam about 6 feet which would give a descent of 14.6 feet—minimum horsepower, 14,168. This dam would require to be about 530 feet long. The bottom and abutments would be on solid bare granite. The water should be diverted on the west side.

#### WATER-POWER AT THE FALLS.

I would suggest that the water-powers be concentrated in as few places as possible; this would make it cheaper to develop the power per horsepower. No dam should be built at any of the water-power falls without the sanction of the government. The dams should be water-tight, and so constructed as not to interfere with other water-power; however, water not used at a lower plant, millsite or generating station should be at the disposal of the government as should any portion of millsite not used.

If a large quantity of power were used at any of the proposed water-powers to be developed, it might be found necessary to have some legislation enacted to prevent the owners of the Kenora dam flooding unnecessarily the power people on Winnipeg river, or to reduce for weeks the minimum flow of the river to one-half or less than what it would naturally be, if not interfered with by the unnecessary closing or opening of their dam.

I have measured the flow of English river at 'the Narrows,' about one mile below the first fall and found the depth of water to be from fifty to eighty feet. In determining the velocity at this point, I could not arrive at any satisfactory conclusion without using a current metre. The results obtained were certainly in excess of the correct figures. I have deducted the minimum flow of English river from its drainage basin.

#### HIGH WATER MARK.

There is a well defined high water mark about five and one-half feet to six and one-half feet above ordinary water. I am informed by old Indians that the water has not reached that height for years past. If the range between high and low water is not more, it is probably due to the greater number of lakes in the Rainy lake and Lake of the Woods district.

I transmit herewith the following plans:—

1. The general plan of the country from Kenora to north of lake Winnipeg and west of the city of Winnipeg, showing general location of water-powers, and location of generating station of Winnipeg City Electric railway, their transmission line, the proposed location of the Winnipeg City Power generating station at Pointe du Bois, their tramway under construction, and their proposed transmission line.



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2. Diagram showing discharge mean velocity and area, cross section, &c., &c. These rating curves were determined by two cross-sections, one made by the Winnipeg City Power company on March 7, 1906, at Pointe du Bois falls, and the other by myself September 12, 1907, about a mile above Lamprey falls, both connected with the gauge height at Pointe du Bois falls. The quantities were deduced by Kutter's formulæ after many trials and compared with the snow and rain fall of the past eleven years.

The great variation shown at the gauge height between April 10 and 20, 1907, are not natural; they are due to the opening or closing of the control dam at Kenora.

Loss by the average yearly run off is about twenty-one per cent.

3. The gauge height for three hundred and twelve days in 1907 was furnished to me by the Winnipeg City Power company, also the cross-section above Pointe du Bois falls. The velocity of the water was taken by a current metre at every four feet in depth, and at distances about twenty feet apart.

4. The profile showing all the bench marks, height of falls, &c.

5. Detailed plans of all the water-powers on a scale of six chains to one inch.

6. Table showing upper and lower gauge reading at Pointe du Bois falls from January 23, 1907, to March 31, 1908.

By means of the diagram and table, the quantity of water and horsepower for every day from January 1, 1907, to March 31, 1908, may be fully ascertained by using the upper gauge reading.

7. Table showing the ground required for millsites.

8. Table of land that might be flooded by proposed millsite, &c.

I have the honour to be, sir,

Your obedient servant,

W. THIBAUDEAU, C.E.



GAUGE reading at Pointe du Bois Falls, taken by the City of Winnipeg Power Department, January 23, 1907 to March 31, 1908.

Date.	Upper Gauge Reading.	Lower Gauge Reading.	Date.	Upper Gauge Reading.	Lower Gauge Reading.
January 23 ...	0·6	0·5	March 25....	0·5	1·0
24....	...	...	26....	0·4	1·1
25....	...	...	27....	0·4	1·1
26....	0·3	0·6	28....	0·5	1·1
27....	...	...	29....	0·5	0·9
28....	...	...	30....	0·5	...
29....	0·2	0·9	April 1....	0·5	0·9
30....	...	...	2....	0·5	1·0
31....	0·2	1·0	3....	0·6	1·2
February 1....	0·2	0·9	4....	0·6	1·2
2....	0·2	0·7	5....	0·6	1·3
3....	...	...	6....	0·6	1·2
4....	0·1	1·0	7....	0·6	...
5....	0·1	1·1	8....	0·6	1·3
6....	0·1	1·1	9....	0·6	1·3
7....	0·3	1·0	10....	0·7	1·3
8....	0·3	0·8	11....	0·9	1·3
9....	0·3	0·3	12....	1·1	1·3
10....	0·3	...	13....	1·3	1·3
11....	0·3	0·3	14....	1·2	...
12....	0·3	0·2	15....	1·1	1·3
13....	0·3	0·3	16....	0·9	1·3
14....	0·3	0·0	17....	0·8	1·3
15....	0·3	0·5	18....	0·7	1·3
16....	0·3	0·5	19....	0·7	1·3
17....	0·4	...	20....	0·6	1·3
18....	0·4	0·6	21....	0·6	...
19....	0·4	0·4	22....	0·6	1·3
20....	0·4	0·4	23....	0·6	1·3
21....	0·4	0·3	24....	0·7	1·3
22....	0·4	0·5	25....	0·7	1·2
23....	0·4	0·5	26....	0·7	1·3
24....	...	...	27....	0·6	1·3
25....	0·4	0·3	28....	0·6	...
26....	0·4	0·1	29....	0·6	1·3
27....	0·5	0·1	30....	0·6	1·3
28....	0·5	0·3	May 1....	0·6	1·3
March 1..	0·5	0·5	3....	0·6	1·2
2....	0·4	0·5	3....	0·6	1·2
3....	0·4	...	4....	0·6	1·3
4....	0·4	0·7	5....	0·6	...
5....	0·4	0·6	6....	0·6	1·2
6....	0·4	0·5	7....	0·6	1·2
7..	0·4	0·6	8....	0·6	1·1
8....	0·4	0·6	9....	0·6	1·1
9....	0·4	0·7	10....	0·6	1·2
10....	0·4	...	11....	0·5	1·2
11....	0·4	0·9	12....	0·5	...
12....	0·4	0·8	13....	0·5	1·2
13....	0·5	0·7	14....	0·5	1·2
14....	0·6	0·8	15....	0·5	1·2
15..	0·5	0·7	16....	0·5	1·1
16....	0·5	0·8	17....	0·4	1·1
17....	0·5	...	18....	0·4	1·0
18....	0·6	0·8	19....	0·4	...
19....	0·6	0·8	20....	0·4	0·9
20....	0·6	0·8	21....	0·4	0·8
21....	0·6	0·9	22....	0·4	0·8
22....	0·6	1·0	23....	0·3	0·7
23....	0·5	1·0	24....	0·3	0·7
24....	0·5	...	25....	0·3	0·7



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GAUGE reading at Pointe du Bois Falls—*Continued.*

Date.		Upper Gauge Reading.	Lower Gauge Reading.	Date.		Upper Gauge Reading.	Lower Gauge Reading.
May	26	0.2	0.7	August	3 ...	1.4	1.4
	27....	0.2	0.6		4....	1.4	1.4
	28....	0.1	0.5		5....	1.4	1.5
	29....	0.1	0.4		6 ...	1.4	1.3
	30....	0.0	0.3		7....	1.4	1.3
	31....	0.1	0.3		8....	1.4	1.3
June	1....	0.1	0.3		9....	1.3	1.3
	2	0.2	0.2		10 ...	1.4	1.3
	3	0.3	0.1		11....	1.4	1.3
	4....	0.4	0.0		12....	1.4	1.3
	5....	0.4	0.1		13 ..	1.4	1.3
	6....	0.5	0.2		14....	1.4	1.3
	7....	0.5	0.3		15....	1.4	1.3
	8....	0.5	0.3		16....	1.4	1.3
	9....	0.5	0.3		17....	1.4	1.3
	10....	0.6	0.4		18....	1.5	1.3
	11....	0.8	0.6		19....	1.6	1.5
	12....	0.9	0.8		20....	1.6	1.6
	13....	1.0	0.9		21....	1.7	1.6
	14....	1.0	0.9		22....	1.7	1.7
	15....	1.1	1.0		23....	1.7	1.7
	16....	1.1	1.1		24....	1.7	1.7
	17....	1.2	1.1		25....	1.7	1.7
	18....	1.3	1.2		26....	1.9	1.7
	19....	1.3	1.3		27....	1.9	2.0
	20....	1.3	1.3		28....	1.9	2.0
	21....	1.4	1.4		29....	1.9	2.0
	22....	1.5	1.5		30....	2.0	2.0
	23....	1.5	1.6		31....	2.0	2.0
	24....	1.5	1.6	September	1....	1.9	2.1
	25....	1.5	1.7		2....	1.9	2.1
	26....	1.5	1.7		3....	2.0	2.2
	27....	1.5	1.8		4....	2.0	2.2
	28....	1.6	1.8		5....	2.0	2.2
	29....	1.6	1.8		6....	2.0	2.2
	30....	1.6	1.8		7....	2.0	2.3
July	1....	1.6	1.9		8....	2.0	2.3
	2....	1.6	1.9		9....	2.0	2.3
	3....	1.6	1.9		10....	2.0	2.3
	4....	1.6	1.9		11....	2.0	2.3
	5....	1.5	1.9		12....	2.0	2.3
	6....	1.5	1.9		13....	2.0	2.3
	7....	1.5	1.9		14....	2.1	2.5
	8....	1.5	1.8		15....	2.1	2.5
	9....	1.5	1.7		16....	2.1	2.5
	10....	1.5	1.6		17....	2.1	2.5
	11....	1.5	1.6		18....	2.1	2.5
	12....	1.5	1.6		19....	2.1	2.5
	13....	1.5	1.5		20....	2.1	2.5
	14....	1.5	1.5		21....	2.1	2.5
	15....	1.5	1.5		22....	2.1	2.5
	16....	1.5	1.5		23....	2.2	2.5
	17....	1.5	1.5		24....	2.2	2.5
	18....	1.5	1.5		25....	2.2	2.5
	19....	1.5	1.5		26....	2.2	2.5
	20....	1.5	1.5		27....	2.3	2.7
	21....	1.5	1.5		28....	2.3	2.7
	22....	1.5	1.5		29....	2.3	2.7
	23....	1.5	1.5		30....	2.3	2.7
	24....	1.5	1.5	October	1....	2.3	2.8
	25....	1.5	1.5		2....	2.4	2.9
	26....	1.4	1.4		3....	2.4	2.9
	27....	1.4	1.4		4....	2.4	2.9
	28....	1.4	1.4		5....	2.5	3.3
	29....	1.4	1.4		6....	2.5	3.3
	30....	1.4	1.4		7....	2.5	3.3
	31....	1.4	1.4		8....	2.5	3.3
August	1....	1.4	1.4		9....	2.5	3.3
	2....	1.4	1.4		10....	2.5	3.3



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GAUGE reading at Pointe du Bois Falls—Continued.

Date.	Upper Gauge Reading.	Lower Gauge Reading.	Date.	Upper Gauge Reading.	Lower Gauge Reading.
October 11	2.6	3.3	December 18	2.5	2.7
12	2.7	3.4	19	2.5	2.7
13	2.7	3.4	20	2.5	2.6
14	2.7	3.4	21	2.5	2.5
15	2.7	3.4	22	2.5	2.5
16	2.7	3.4	23	2.5	2.5
17	2.7	3.4	24	2.5	2.5
18	2.7	3.4	25	2.5	2.5
19	2.7	3.4	26	2.5	2.5
20	2.7	3.4	27	2.5	2.4
21	2.7	3.4	28	2.5	2.3
22	2.7	3.4	29	2.5	2.3
23	2.7	3.4	30	2.5	2.4
24	2.7	3.4	31	2.5	2.3
25	2.7	3.4	January 1	2.5	2.3
26	2.7	3.4	2	2.4	2.3
27	2.7	3.4	3	2.4	2.4
28	2.7	3.4	4	2.4	2.3
29	2.7	3.4	5	2.4	2.3
30	2.5	3.3	6	2.4	2.3
31	2.5	3.3	7	2.4	2.4
November 1	2.5	3.3	8	2.4	2.4
2	2.5	3.3	9	2.4	2.3
3	2.5	3.3	10	2.4	2.4
4	2.5	3.3	11	2.4	2.3
5	2.5	3.3	12	2.3	2.3
6	2.5	3.3	13	2.4	2.3
7	2.5	3.3	14	2.4	2.3
8	2.5	3.3	15	2.4	2.4
9	2.5	3.3	16	2.4	2.3
10	2.5	3.3	17	2.4	2.3
11	2.5	3.3	18	2.5	2.3
12	2.5	3.3	19	2.5	2.3
13	2.5	3.3	20	2.5	2.3
14	2.5	3.3	21	2.5	2.3
15	2.5	3.3	22	2.5	2.3
16	2.5	3.3	23	2.5	2.3
17	2.5	3.3	24	2.5	2.0
18	2.5	3.3	25	2.5	2.0
19	2.5	3.3	26	2.5	2.1
20	2.5	3.3	27	2.5	2.2
21	2.5	3.3	28	2.5	2.5
22	2.5	3.3	29	2.6	2.7
23	2.5	3.3	30	2.6	2.9
24	2.5	3.3	31	2.6	2.9
25	2.5	3.3	February 1	2.6	2.9
26	2.5	3.3	2	2.7	2.0
27	2.5	3.3	3	2.7	3.0
28	2.5	3.3	4	2.7	2.7
29	2.5	3.3	5	2.8	2.9
30	2.5	3.3	6	2.8	2.9
December 1	2.5	3.3	7	2.8	2.9
2	2.5	3.3	8	2.8	3.0
3	2.5	3.3	9	2.8	2.8
4	2.5	3.3	10	2.8	2.6
5	2.5	3.3	11	2.9	2.3
6	2.5	3.2	12	2.9	2.2
7	2.5	3.1	13	2.9	2.0
8	2.5	3.1	14	2.8	2.0
9	2.5	3.0	15	2.8	2.0
10	2.5	3.0	16	2.8	2.0
11	2.5	3.0	17	2.8	2.0
12	2.5	2.9	18	2.8	1.9
13	2.5	2.9	19	2.8	2.0
14	2.5	2.8	20	2.8	1.9
15	2.5	2.8	21	2.7	1.9
16	2.5	2.7	22	2.8	1.8
17	2.5	2.7	23	2.8	1.8



Gauge reading at Pointe du Bois Falls—Continued.

Date.	Upper Gauge Reading.	Lower Gauge Reading.	Date.	Upper Gauge Reading.	Lower Gauge Reading.
February 24...	2.7	2.3	March 16 ...	2.8	1.5
25...	2.6	2.5	17 ..	2.8	1.7
26 ...	2.6	2.5	18....	2.7	1.5
27....	2.7	2.5	19....	2.7	1.5
28....	2.7	2.5	20 ..	2.7	1.5
29...	2.7	1.9	21....	2.8	1.4
March 1....	2.7	1.8	22....	2.7	1.5
2....	2.8	1.7	23....	2.8	1.3
3....	2.8	1.7	24 ...	2.8	1.3
4....	2.8	1.6	25....	2.8	1.3
5....	2.8	1.6	26 ..	2.7	1.3
6....	2.7	1.6	27....	2.7	1.2
7....	2.7	1.6	28.	2.7	1.2
8 ..	2.7	1.7	29...	2.7	1.1
9....	2.7	1.8	30....	2.7	1.0
10 ...	2.7	1.8	31...	2.7	1.0
11....	2.7	1.6			
12....	2.8	1.5			
13 ...	2.8	1.6			
14....	2.8	1.5			
15 ..	2.8	1.5			

N.B.

C.P.R. levels.

Upper gauge... .. 962 69

Lower gauge ..... 930 95

Discharge and Horsepower Table for Winnipeg River, Manitoba—Pointe du Bois, Upper Gauge, 1907-1908.

Upper gauge reading.	Discharge foot-second.	Theoretical Horsepower per foot fall.	Upper gauge reading.	Discharge foot-second.	Theoretical Horsepower per foot fall.
3.00....	72000	8180	0.80.....	33500	3624
2.90.....	69500	7700	0.70.....	32420	3512
2.80.....	67100	7300	0.60 .....	31300	3386
2.70 ....	64500	6855	0.50.....	30350	3285
2.60 ..	62025	6710	0.40 .....	29450	3186
2.50 ...	59600	6448	0.30..	28450	3078
2.40 .....	57350	6205	0.20..	27500	2976
2.30 ..	55250	5978	0.10.....	26550	2880
2.20.....	53200	5791	0.00.....	25600	2770
2.10 ....	51250	5545	—0.10 ....	24700	2672
2.00..	49550	5356	—0.20.. ..	23950	2592
1.90.. ..	48025	5196	—0.30.....	23123	2500
1.80. ....	46600	5042	—0.40.. ..	22300	2413
1.70.	45150	4886	—0.50..	21550	2331
1.60 .....	43700	4728	0.60.....	20800	2250
1.50.....	42300	4560	—0.70.....	20050	2169
1.40.....	41000	4435	—0.80.....	19400	2100
1.30....	39100	4278	—0.90.. ..	18750	2018
1.20... ..	38420	4156	—1.00.....	18100	1978
1.10.	37150	4020	—1.10 .....	17450	1888
1.00. ....	36000	3900	—1.20 .....	16800	1816
0.90 .....	34600	3747	—1.30.....	16150	1740

Approximate list of parcels of land that are liable to be flooded if dams are built as suggested. Generally, any land where the water is not to be raised more than twelve feet is not likely to be flooded.

SILVER FALLS TO WHITEMUD FALLS.

Section 1, east half section 2, township 18, range 10 east of the principal meridian, section 36, north half and southeast quarter section 25, and northeast quarter



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section 24, township 17, range 10, southwest quarter section 6, township 18, range 11, north half section 30, section 31 and west half section 32, township 17, range 11.

GRAND DU BONNET FALLS.

Sections 2, 3, 10, 11, 14, 22, east half section 15, southeast quarter and west half section 23, township 17, range 11.

LOWER SEVEN RAPIDS FALLS.

North half section 27, northeast quarter section 28, east half section 33, section 34 and west half section 35, townships 13, range 11.

UPPER SEVEN RAPIDS FALLS.

Sections 31, 32, 35 and 36, northeast quarter section 34, north half section 33, township 13, range 12, south half section 5, sections 1, 2, 3 and 4, south half sections 10 and 11, township 14, range 12.

POINTE DU BOIS FALLS.

East half section 35, section 36, township 15 range 14, west half section 31, township 15, range 15, section 1 east half section 2, south half and northeast quarter section 12, township 16, range 14, northwest quarter section 3, north half and southwest quarter section 4, sections 5, 6, 7, 8, 9, 14, 15, 16 and 23, north half and southwest quarter section 10, north half section 11, east half and southwest quarter section 17, south half sections 21 and 22, township 16, range 15.

LAND RESERVED FOR MILLSITE.

POINTE DU BOIS.

Section 36, township 15, range 14 east of principal meridian.

SLAVE FALLS.

Southeast quarter section 11, southwest quarter section 12, northwest quarter section 1 and northeast quarter section 2, township 15, range 14.

UPPER SEVEN RAPIDS FALLS.

West half section 31, township 13, range 12, section 36 and north half section 25, township 13, range 11.

LOWER SEVEN RAPIDS FALLS.

West half section 35, section 34, north half section 27, east half section 33 and northeast quarter section 28, township 13, range 11.

GRAND DU BONNET FALLS.

Sections 14, 22, 23, north half section 15, township 17, range 11.

SILVER FALLS.

North half section 1, south half section 12, northeast quarter section 2 and southeast quarter section 11, township 18, range 10.

PINE FALLS.

Northwest quarter section 18, west half section 28, north half section 19 and section 29, township 18, range 10.



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## APPENDIX No. 42.

## REPORT OF J. N. WALLACE, D.L.S.

SURVEY OF THE BOUNDARY BETWEEN BRITISH COLUMBIA AND THE YUKON TERRITORY ACROSS  
THE DALTON TRAIL.

CALGARY, ALTA., January 6, 1908.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa, Ont.

Sir,—I have the honour to submit the following report of the survey of part of the boundary between British Columbia and the Yukon Territory, undertaken in accordance with your instructions of May 13, 1907:—

I left Calgary on May 27 and reached Vancouver on the 30th, having stopped over for two days at Kamloops, B.C., where I purchased thirteen pack horses.

The party was organized and the outfit completed at Vancouver. We left there on June 7 by the Canadian Pacific steamer *Princess Beatrice*, and reached Skagway on the evening of June 11.

My instructions were to offset the monuments on the Yukon boundary between lake Bennett and Windy arm, and then to proceed with the survey across the Dalton trail. I, therefore, divided the party at Skagway; the head packer and three men were sent with all the horses and the bulk of the outfit across to Pyramid harbour, which is about three hours run southwest from Skagway, and is on the west side of Chilkat inlet. This portion of the party immediately set to work to get the outfit up Chilkat river and then up the Dalton trail as far as possible. The boundary between British Columbia and the Yukon crosses this trail about one hundred and five miles northerly from Pyramid harbour.

I myself, with my assistant, Mr. Blanchard Dodge, and the remainder of the party left Skagway by the White Pass and Yukon railway on June 13 and reached Pennington, B.C., fifty-two miles north, the same afternoon. Next day the outfit was moved up to the boundary and work commenced on the part east of lake Bennett.

The boundary monument known as 'H' stands about fifty yards east of the White Pass and Yukon railway track, which here runs along the east edge of lake Bennett. It is plainly visible to anyone passing on the train, and is about one mile and a quarter north of Pennington. There is only a residence for an operator and two parties of railway sectionmen at Pennington, but all trains stop there, and it is possible for a person to stop there over night.

The boundary crosses a long steady incline as it goes easterly from monument 'H.' At a distance of a mile and a quarter it reaches the summit of the first mountain east of lake Bennett, at an altitude of about two thousand feet above the lake. As the line nears this summit it goes through a good deal of spruce timber, and a person standing on the shore of lake Bennett can clearly see three lines cut out against the sky at the summit. The most northerly of the three lines is the boundary between British Columbia and the Yukon.

Between lake Bennett and the summit just referred to there is a monument on a local shoulder about seven-eighths of a mile east of the lake. After reaching the summit the remainder of the boundary to Windy Arm is across a rough mountainous country. While it is unfit for pack horses, and we had to pack our outfit across our-



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selves, there is no difficulty in reaching any of the boundary monuments, and, except the eastern slope from mount Racine down to Windy Arm, there are no precipitous areas near the line. This section has already been described in detail in the departmental report for the year 1901. The total horizontal distance from lake Bennett to Windy Arm is a little over eight miles. There are monuments on the shores of both lakes and ten intermediate ones. The monument on the west shore of Windy Arm is known as 'G.' The next one west is three-quarters of a mile from Windy Arm, and stands in dense timber on the top of the westerly bank of a small stream flowing north and about one hundred feet up from its junction with Racine creek, which latter flows easterly around the north slope of mount Racine and empties into Windy Arm about half a mile south of the boundary. The next monument west is on the summit of mount Racine. Windy Arm is a little over a mile wide along the boundary. The most easterly post offsetted was that standing on its east shore.

The town of Wynton is situated just south of the boundary on the west shore of Windy Arm. Conrad is about six miles to the north. Much valuable ore has been found in this locality and a large amount of development work has been done, and several miles of aerial tramways have been constructed on the west shore north of the boundary. Some small work has also been done south of the boundary on the east shore.

There is a kind of pass by which one may easily cross the mountains from Wynton to Pennington, keeping near the boundary line. The route lies up the valley of Racine creek, keeping on the north side high up above the stream, until nearing its sharp turn to the south. Here the creek should be crossed and the southeasterly bank followed, which leads to a grassy open valley containing a small elongated lake through which Racine creek flows north. A boundary monument may be seen here, standing about 30 feet up the westerly slope of the valley, and about 100 feet northwest of the north end of the lake. After proceeding a quarter of a mile south of the lake, a wide, rough trough-shaped valley may be seen extending to the south of west. By following it westerly a stream flowing west is ultimately found. This should be followed down until about two and a half miles from the lake where it should be left, and a route taken a good deal higher up along the lower slopes of some mountains forming the southerly side of the wide valley. By proceeding along these slopes, the summit overlooking lake Bennett is reached with nothing worse than some deep ravines which run at right angles across the route. The descent to White Pass railway is easy, if one keeps a little north of the boundary.

The work near Windy Arm was completed on July 3 and next day we went by the steamer *Gleaner* to Cariboo on the White Pass railway and from there to Skagway. This steamer runs from June 1 to November 1 and connects Cariboo, Atlin, Conrad and Wynton. There are also smaller steamers on Windy Arm.

We left Skagway for Haines on July 6 and reached there after an adventurous voyage of two hours in the little mail steamer *Hegg* against a very rough sea. Haines is about eighteen miles southwest of Skagway.

From Haines we proceeded up the Chilkat and Dalton trail to the Yukon boundary. As the route taken is that usually followed, it is here described in some detail as far as Dalton Post which is seventy miles north of the international boundary.

Haines is the best seaport from which to proceed up the Dalton trail, provided no horses are taken. A long tongue of land runs down to the sea, between Chilkoot and Chilkat inlets. Haines is on the Chilkoot or east side; 'Hindistuckie,' five miles from Haines, is the name given to the point of embarkation for proceeding by water up the Chilkat, and is on the west side of the tongue of land. It is merely a name, and uncertain at that as I could not find anyone who would assume the responsibility of spelling it.

If horses are taken, there is only one trail for them at present up the Chilkat, and that is on the far side from Haines and 'Hindistuckie.' In order to avoid cross-



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ing them over the dangerous quicksands of the Chilkat, they should be landed, in the first instance, on the west side of this inlet at Pyramid harbour. This is a fine harbour and the Alaska Packers Association have a wharf there, but it is not a regular calling place for steamers.

From either 'Hindistuckie' or Pyramid harbour, canoes carrying two tons of freight each travel up the Chilkat as far as Wells, about twenty-seven miles up stream. They depend upon a prevailing south wind to take them against the currents. If this wind is not on hand when wanted, there is no redress. It is necessary to wait for it, as no headway can be made by any other means. We had to wait a day and then had such an apology for a wind that, after eleven hours on the water, we had to camp near midnight at Klukwan, a mile short of Wells. With a good wind which is fairly frequent, the distance to Wells is covered in six hours. When coming down in October we had a small gale blowing up stream against us.

Wells is on the west side of the Chilkat, at its junction with Klehini river, and is the head of navigation so far as freight is concerned. From here to Porcupine is thirteen miles. The United States authorities are building a first class wagon road between Wells and Porcupine, already sufficiently far advanced to save two dangerous crossings of the Klehini. The intention, I believe, is to extend the road northerly to Pleasant Camp to connect with the Canadian road from there, and also to build a road along the east side of the Chilkat from 'Hindistuckie' to Wells. When this is completed, Haines will be the best landing place for all outfits, with or without horses.

At Porcupine there is a postoffice and extensive mining works, and a trading store of the Porcupine Gold Mining company. It is seven miles over a good wagon road from here to 'Pleasant Camp,' but Klehini river must be crossed on the way. 'Pleasant Camp' is, in summer at least, a beautiful spot just within Canadian territory.

Beyond 'Pleasant Camp' only pack horses can at present be used, but a wagon road is now being constructed to 'Rainy Hollow,' which is fourteen miles farther. Some excellent copper ore has been found near 'Rainy Hollow' and a good deal of work is now in progress. The mining district is all in Canadian territory and, if reports are justified, it should become famous.

Two routes can be followed at present from 'Pleasant Camp' to 'Rainy Hollow;' one follows the valley of the Klehini, keeps low down in the timber, and is very bad; the other strikes high up in the mountains a couple of miles out from 'Pleasant Camp.' This upper trail crosses a kind of summit pass and is difficult to follow in bad weather. Most summit passes have no definite land marks. Their topography is open and rolling and there is often danger in a fog or snowstorm, that one may get down over the wrong watershed. The elevation of 'Rainy Hollow' is stated to be 2,700 feet.

The next stage to 'Glacier Camp' is about twenty-two miles, with no possible intermediate camping ground and no shelter of any kind if bad weather comes on. Timber is left at 'Rainy Hollow' and the trail gradually rises to an elevation of 3,800 feet. Just before the crossing of Clear creek, and about half way, the trail begins to descend and at 'Glacier Camp' is about 3,200 feet elevation. When nearing this camp the trail follows down the gravel bed of a large stream flowing northerly called Nadahini river (a branch of the Chilkat.) As soon as it leaves this river and turns up on the westerly bank, some spruce timber may be seen to the west, and it is better to camp here than to go on to the 'Cabin' where there is no firewood. This would be about a mile before reaching the 'Cabin.' Horses will surely go back to 'Mosquito Flats,' a kind of little prairie about four miles south of the 'Cabin,' but they will go back in any case. The 'Cabin' is about a quarter of a mile back from Nadahini river and visible in the high willows only when it is very close.

From 'Glacier' to 'Bear Camp' is fourteen miles. About nine miles from 'Glacier' the trail passes around the east side of a lake and then down a little canyon in which



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flows Mansfield creek, the trail following the edge of the stream. It then enters an extensive open dry area with willow bushes.

The boundary between British Columbia and the Yukon can now be easily identified, although still about six miles to the north. The valley of the Tatshenshini stretches away a little west of north, with a group of mountains standing out in the far distance, which are north of Dalton post. To the west of north and about seven miles away may be seen a high sharp ridge, running east and west. At the extreme east end of this ridge there is a dome-shaped prominence with a small terrace a little below its summit. The dome is the most easterly prominence on the sky line west of the Tatshenshini valley. On the summit of this dome there is a boundary monument. The ridge referred to is plainly visible from a point about a mile south of 'Glacier Camp,' and at intervals thereafter along the Dalton trail. On the east of the Tatshenshini valley is a high even-topped mountain range, running almost north. The boundary crosses about a quarter of a mile down the shoulder at the extreme southerly end of this range, and then passes east up the valley at its foot, which is the valley of Blanchard river. After travelling across the above mentioned open area the old ford across Tatshenshini river is reached, about seventy yards below the junction of a large stream coming in from the east. The ford is partly washed out and a better one may be obtained about a mile higher up the Tatshenshini. 'Bear Cabin,' a former stopping place of the Royal Northwest Mounted Police, stands apart from any river and about two miles northeast of the old ford. The best camping ground is obtained by leaving the Dalton trail shortly after entering the open area and going about a mile northeast to the large stream just mentioned.

From 'Bear Camp' to Dalton post is about twenty miles, with, however, several possible intermediate camping grounds. Two junctions of streams are crossed in deep valleys, called Sheep canyon and Horse canyon, and distant five and eight miles from the old ford. Either of these forms a good camping ground if the canyon is followed down a quarter of a mile from the trail. It is stated that a good pass is obtained across the mountain range west of the Tatshenshini by following up the most northerly of the two streams uniting in Sheep canyon. This pass leads to the head waters of a stream flowing westerly into the Tatshenshini, about two miles north of the boundary. I believe the Dalton trail reaches its highest elevation between Sheep canyon and the old ford. The trail enters timber about six miles north of Horse canyon and keeps in timber to Dalton post. The Tatshenshini can be forded opposite the 'post' if the water is very low, but the best ford is obtained a mile lower down. The 'post' is on the farther side. From Dalton post it is seventy-three miles to 'Champagne Landing,' and from there sixty miles by stage to Whitehorse. A branch trail runs southwest from Dalton post for forty miles along the west side of Tatshenshini river, which flows southerly after leaving Dalton post.

We left Haines on July 9 and reached Wells next day, where I found all the pack horses and the four men sent on from Skagway on June 12. They had transported all the outfit as far as 'Pleasant Camp,' and about three-quarters of a ton to 'Glacier Camp,' eighty miles from Haines. We all reached the boundary line in Horse canyon on July 23, having been delayed by high water in all the rivers and having to double trip part of the journey. Cloudy weather prevented observations for latitude being taken until the nights of July 29 and 30, when a point was established from the observations of twenty-four pairs of stars with the zenith telescope, with a probable error of 0.23 of a second. The point of observation was on the west bank of the Tatshenshini, about three-eighths of a mile south of the monument known as 'M.'

By August 7 a trial line had been run west from 'M' for a distance of nearly five miles to the summit of the mountain range west of the Tatshenshini. This range extends many miles southerly and northerly as far as Dalton post, where the Tatshenshini flows around the north end. It caused us delays aggregating at least two weeks during the season, and I refer to it below as the Barrier range. It was hard enough to get the



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line across, but out of the question to get the camp over, so we had to travel around by Dalton post, necessitating two crossings of Tatshenshini river in order to get at the end of the line west of the range.

I may say that both the Tatshenshini and Klehini rivers were constant sources of trouble and danger all season. Their current is so swift that a man on foot cannot ford them if the water is even up to his knees. Fords exist one day and are washed out the next, and added to all is the fact that the muddiness of the water prevents its depth from being known and the presence of huge boulders makes footing very insecure. Horses new to such rivers at first allow themselves to drift off a ford and pay no attention to their responsibilities, but after a time they learn to maintain their ground against the current to a remarkable degree. The average rate of the Tatshenshini is six miles an hour and the Klehini is swifter.

Having found the end of the line, it was continued on the Tatshenshini near station 'N,' where a long hunt for the former post ensued. It was subsequently ascertained that this post had been washed away in a flood on the river. Observations for latitude were taken again here on the east bank of the Tatshenshini on the nights of August 24 and 25, when a point was established from the results of the observation of twenty-one pairs of stars, with a probable error of 2.24 of a second. In the matter of taking observations for latitude Mr. Blanchard Dodge gave the most valuable assistance and I think will make a name for himself as an observer. The final boundary line was then run back easterly, the posts being offsetted to the true line and a new line cut out in the timber, and the whole completed to the summit of the Barrier range. Camp was then moved back easterly around by Dalton post, and the remainder of the boundary completed to the Tatshenshini at station 'M.'

On September 21 a trial line running east from 'M' was commenced and continued for five and three-quarter miles, where we ended operations for the season.

We started back for the coast on September 30. On the night of October 1, we were camped at 'Glacier' at an elevation of 3,200 feet, and four inches of snow fell. We crossed the summit next day in a snowstorm, which turned to fog and rain within a few miles of 'Rainy Hollow.' Next day the journey was continued to Porcupine in pouring rain, while no doubt heavy snow was falling on the summit we had just left, for on October 8 there was a depth of over three feet of snow there.

We reached Haines on October 6, and in the early morning of the 8th we crossed over to Skagway in the steamer *Georgia*, which plys between Juneau, Skagway and Haines. On the evening of the same day I paid off all the men, except one, allowing them their time to the date of their arrival at Vancouver, October 13.

I then proceeded with one man to Windy Arm where I corrected the position of a post on the boundary and returned to Skagway on October 14. Skagway was left on the 17th by Canadian Pacific steamer and I reached Vancouver on the 20th and Calgary October 23.

## BOUNDARY LINE FROM STATION 'M' TO STATION 'N.'

Monument 'M' is situated in a dense growth of spruce on the east bank of Tatshenshini river about one hundred and thirty yards from the river, and twenty-two feet above its level. It is about half a mile above the junction of the stream coming down from Horse canyon. It can be reached from the Dalton trail by following down the north side of the streams in either Sheep canyon, which is best, or in Horse canyon, but the Tatshenshini has then to be forded in a bad place. I believe a trail could be cut north from 'Bear Camp,' keeping back some distance east of the Tatshenshini and striking the boundary where it crosses Blanchard river, when it is only a short distance west across a hill to 'M.'

The Tatshenshini is about one hundred and twenty feet wide and varies much in depth. As a rule it cannot be forded on the boundary line. Immediately after leaving the Tatshenshini the land rises rapidly to the first monument west of 'M,' which is



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di-stant five-eighths of a mile and is 800 feet above it. It stands on a rough plateau overlooking the valley of Horse canyon to its northwest. The next monument is in the valley of Horse canyon, a little over half a mile west. It is one hundred and eighty yards west of where the Dalton trail crosses the northerly of the two streams which unite here, and is in poplar timber, about thirty feet above the level of the stream. The dome shaped mountain previously referred to can be seen here west of Dalton trail. It has apparently a double top with a small depression in which will probably be seen a wedge shaped snow patch. This mountain is referred to as Mount Kona. The monument on its summit is a mile and a quarter from the one near Dalton trail and 2,270 feet above it. Between these two there is another one on a rough turfy plateau of the kind known as a 'tundra.' It is nearly half a mile west of Dalton trail.

West of Mount Kona, on which is monument XIII at an elevation of 5,600 feet, the boundary crosses a very mountainous region for two miles and a quarter to the summit of the Barrier range. This portion contains two large snow fields and glaciers. There are two monuments, XII and XI, at altitudes of 6,140 feet, on spurs whose surface is a mass of boulders. About half a mile northwest of XII is a small lake at an altitude of 5,600 feet, whose border is a mass of ice.

The next monument, number X, is on the summit of the Barrier range and is at 6,520 feet altitude. From this point the huge mass of Mount St Elias can be clearly seen on the far western horizon, about one hundred miles away. About half a mile to the northwest of number X is Mount Beaton (6,900 feet), the highest peak in this neighbourhood. From the summit of this range there is a space of one and three-quarter miles, and a fall of 1,800 feet to the next monument farther west, the various spurs in the intervening area being composed of loose rocks, liable to slide at any moment, and not affording any stable position for a monument. This next monument is on the summit of a round topped mountain, altitude 4,728 feet. Number VIII is on a rough turfy plateau between the foot of the round-topped mountain and a small stream flowing south across the boundary. Number VII is three-eighths of a mile farther west and sixty feet west of top of the valley of the same stream. The elevations of these last two are 3,720 and 3,600 feet.

The boundary now enters timber and continues in it more or less all the way to the Tatshenshini. Monument VI is a little over a hundred yards east of the crossing of a large stream flowing northwest and is in thick spruce timber. I believe some valuable mineral will be found up this stream. It is the stream previously referred to as having its head waters connected by a pass with the stream flowing east through Sheep canyon on the Dalton trail.

The remaining four monuments to Station 'N' are in a rolling country. Monument 'N' is east of the Tatshenshini on a plateau 160 feet above the river and 132 feet back from the edge of the top of the bank. The elevation of the river is here 1,600 feet, a fall of 1,100 feet occurring in the river during its course of thirty-five miles from 'M.' The distance between monuments 'M' and 'N' along the boundary is a little less than eleven and one-half miles.

Any person looking for post 'N' should proceed southwest along the pack trail from Dalton post. After about thirteen miles a large stream, called Whitestone river, joins the Tatshenshini from the west; the trail crosses this river close to its junction with the Tatshenshini. About a mile below Whitestone river is Bridge creek, also on the west side, which flows in a small canyon. The boundary is between five and six hundred yards below the mouth of Bridge creek. The production of the line was cut out across a small timbered island and for a short distance into the timber on the west bank. The island is being rapidly washed away. It is difficult to ford the Tatshenshini near 'N,' and it is too swift for a raft. We forded it between Bridge creek and Whitestone river, but the horses had frequently to swim.

West of the Tatshenshini, the country contains rolling spruce covered hills for possibly fifteen miles when it reaches the foot of a lofty snow covered range running northwest, which attains an altitude of about 8,500 feet and holds many glaciers. Near



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the boundary there is a good deal of timber around Bear camp, where an extensive belt of spruce runs around the lower slopes of the hills which stand on the east side of the Tatshenshini valley between Mansfield creek and Blanchard river. On the west side of the valley there are also small areas of spruce. Along Tatshenshini river itself timber commences about two miles below the old ford near 'Bear camp,' and continues thereafter down the whole course of the river. Spruce follows up the Blanchard for about fifteen miles from its junction with the Tatshenshini. Small poplar occurs up the sides of nearly all the small streams. The limit of spruce appears to be about three thousand two hundred feet altitude. Poplar exists at a higher elevation than spruce in small sheltered valleys, and may be found up to three thousand four hundred feet, but on the open mountain sides and wide valleys it cannot live even as high as spruce. The nature of the soil may, of course, have something to do with this difference. Willow occurs as high as three thousand eight hundred feet if good soil happens to exist so high. The last of vegetation is reached, as a rule, about four thousand three hundred feet. The limit of poplar is almost reached on the boundary at the monument in Horse canyon which is at an elevation of three thousand three hundred and thirty feet. West of this there is no timber until monument VII is reached. The monument, at an elevation of two thousand eight hundred feet, is in thick timber and thereafter westerly the whole country is timbered. South of Dalton post a good deal of spruce occurs. There is no pine of any kind in the country.

With regard to any elevations given in the neighbourhood of the boundary, it may be stated that the elevations of points on the boundary were connected by trigonometrical processes and may be relied upon relatively. If any correction should be applied to the whole, such correction could be most easily found by a reference to the boundary monument in Horse canyon. This monument is close to the Dalton trail and therefore easily accessible to any person who believes he can ascertain its true elevation above sea level.

The season as a whole was fine. When we first reached lake Bennett on June 15 there was no snow even at altitudes of six thousand feet, except a few patches. I believe, however, that the country along the boundary near the White Pass railway has a milder climate than that near Dalton trail. June and July were fine with spells of heavy rain, but August had many fogs in the higher altitudes. The weather does not appear to change suddenly but oscillates back and forth from fine to bad weather. A storm may generally be expected to culminate four or five days after the first appearance of clouds following a spell of fine weather. The weather then slowly recovers. When preparing to take observations it is well to bear this in mind. On September 3, snow fell to an altitude of 5,900 feet, but four days afterwards a heavy rainstorm occurred and washed all the snow off up to 6,600 feet. I am inclined to think this storm would have been snow in most seasons. On September 18 four inches of snow fell as low as 3,000 feet, but this was obliterated by rain subsequently up to 4700 feet, which was the snow line when we started homeward on September 30. On October 1 snow began to fall at 3,800 feet, and at this altitude there was a depth of three feet of snow on October 8. As regards the valleys, though both latitude and altitude are high, while the season lasts there is no very great difference from the season in the prairie provinces, but it ends suddenly and months earlier than in the provinces. To show that the climate is milder near lake Bennett and Windy Arm than farther west near Dalton post, I may say that when I was at Windy Arm on October 14, there was no snow at all along the boundary line, and even on the neighbouring higher peaks there was less snow than in the early summer.

Along the Dalton trail there is good grass nearly everywhere up to 3,500 feet, and horses do well during the season. I believe the country north of Dalton post opens earlier in spring than to the south, but people who have been to Dalton post both by the Whitehorse and by the Chilkat recommend the latter as the best route. The season for the passage of horses across the summits of the Dalton trail between



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'Pleasant Camp' and Dalton post would appear to be from June 5 to October 5. I would rather try to begin earlier than make any attempt to stay later. We were very fortunate, but I saw enough to be able to appreciate the dangers of these summits in bad weather.

Throughout the season I met with the utmost courtesy from all United States officials and others, while passing through Alaska, and wish to express my acknowledgment of the same.

I have the honour to be, sir,  
Your obedient servant.

J. N. WALLACE, D.L.S.



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## APPENDIX No. 43.

## REPORT OF ARTHUR O. WHEELER, D.L.S.

## PHOTO-TOPOGRAPHICAL SURVEY OF THE ROCKY MOUNTAINS.

CALGARY, ALTA., November 28, 1907.

E. DEVILLE, Esq., LL.D.,  
Surveyor General,  
Ottawa.

Sir,—I have the honour to submit the following report on the past season's operations:—

Work in the field was commenced on June 21, and a party sent to Paradise valley, near lake Louise, where it was required to obtain some missing photographic data. Here also the party, under instructions from the deputy minister, assisted the Alpine Club of Canada in the organization and effectiveness of its second annual camp. Without such assistance the camp would have been impossible, for there are as yet few trained mountaineers in Canada, and the members of my climbing parties acted as guides upon this occasion. These, through long experience, are the equals and in some respects the superiors of Swiss guides.

A word concerning the Alpine Club may not be amiss. It was organized on March 27, 1906, with a membership of 79, which has in less than two years increased to over 300. Members are scattered through the length and breadth of Canada, from Halifax to Vancouver. The membership is not confined to Canada, but extends to Australia, South Africa, France, England, Ireland and the United States of America, where it has representatives in ten states of the union. Three members of the Alpine Club of England, the oldest and most exclusive of all the Alpine clubs of the world, and three Fellows of the Royal Geographical Society, are among the Canadian club's members.

The result of the organization is the springing up of a most enthusiastic appreciation of Canada's mountain regions by Canadians, especially noticeable during the past summer, when more real mountaineering was done in the Canadian Rockies than for three years previous, not only by our own people but by people from other countries.

The value of the club was immediately recognized by the Canadian Pacific Railway company, and this powerful corporation has given it all possible assistance since its inception, quickly foreseeing that the thousands of which its membership will ultimately consist will be the best possible medium for converting the splendid Alpine tracts of Canada into a revenue producing centre, such as the European Alps, from the inflow of tourists.

On July 15 the survey party was sent to Golden, B.C., in charge of M. P. Bridgeland, D.L.S., my chief assistant, and climbing and photography for mapping purposes was immediately begun.

Accompanied by two assistants and a packer I made a flying trip up the Yoho valley to the Yoho glacier, where metal plates had been set out the previous year for the purpose of ascertaining the rate of movement of the great ice tongue here out-flowing from the Wapta ice field. Too little attention has been bestowed upon this branch of science by the government surveyors in the mountains, and, though possessing the best opportunities owing to the vast areas of ice and snow distributed



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along the higher portions of the several mountain ranges, most of the observations made so far have been by scientists from other countries.

Having checked the movements of the plates for the year, and made a quick photographic survey of the icefall and surrounding valley, I proceeded to Golden and, organizing two parties, crossed Columbia river. One party under Mr. Bridgeland was put to work in the Dogtooth mountains on the headwaters of Grizzly and Quartz creeks. With the other I carried the work southward along the west side of Columbia river.

On August 25 Mr. Bridgeland's party recrossed Columbia river and commenced a survey of the Beaverfoot range southward along Columbia river valley. At the same time I pushed into the Spillimacheen mountains with the intention of paralleling the work of the party on the east side of the Columbia.

Much delay and hindrance was caused to the work by the exceptionally stormy wet weather encountered during the months of August and September. It was intended that Mr. Bridgeland's party should work southward to the junction of Kootenay and Columbia rivers, but it was found impossible to get farther than thirty miles from Golden.

On the other side of the Columbia the dense forests extending many miles back from the stream forced us to keep to the heads of the tributary streams and to work from these sources to the peaks overlooking the valley of the main waterway.

Between the north and south branches of Spillimacheen river and southward therefrom lies a magnificent tract of truly Alpine country, with wide icefields reaching in every direction, from which rise sharp peaks, snow-clad domes and rocky precipices in the wildest confusion, many of the peaks attaining an altitude of little less than 11,000 feet above sea level. Icefalls are everywhere and waterfalls leap from sheer heights many hundreds of feet, to the beautiful Alpine valleys below. This tract is practically unknown and unmapped; the peaks are unnamed, and, except in so far as it has been visited by the mining prospector, it is a new region and yet remains to be explored. It is the home of the caribou and wild goat, and would furnish a paradise for the tourist and lover of nature if properly brought to notice. Moreover, Columbia river as a navigable waterway, and pony trails made by prospectors up the main valleys to numerous mining prospects, render it comparatively easy of access.

On September 19, owing to the continued wet weather, and the necessity of doing some work up Blaeberry river, and along the Columbia below Golden, I crossed the river and called in Mr. Bridgeland's party. This party was now sent up the Blaeberry to obtain sufficient data to enable the work carried northward from Kicking Horse valley to be mapped along the Blaeberry.

With my own party, I made a flying trip up Bluewater river and occupied several peaks in that vicinity. I then, with Donald as a base, occupied three of the outlying peaks of Dogtooth range as far as Quartz creek near Beavermouth, thus completing the work which Mr. Bridgeland had been unable to finish owing to bad weather.

The last two weeks of October were occupied by Mr. Bridgeland's party in making a traverse up Blaeberry river to tie in the camera stations he had previously occupied. With my own party I made a traverse along the railway from Donald to Beavermouth, using the railway as a base to tie in the camera stations occupied on both sides of the Columbia valley.

October was an exceptionally fine month and good work was accomplished, thus saving an otherwise disastrous season. The survey was closed upon that previously made of the Selkirk range and information is now at hand to furnish topographical maps of the mountain area lying along both sides of the Canadian Pacific railway between The Gap at the eastern escarpment and Revelstoke at the second crossing of Columbia river. This belt of topographically surveyed country extends largely to the limits of the railway belt.



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During the season forty peaks were climbed and seventy-seven camera stations occupied thereon. In addition twenty-four camera stations were occupied along the railway at various points of vantage. Four hundred and thirty-one plates were exposed and data completed to enable the mapping of more than one thousand square miles of mountain country, which work will be performed during the coming winter and spring.

I have the honour to be, sir,

Your obedient servant,

ARTHUR O. WHEELER, *D.L.S.*,

*Topographer of the Department of the Interior.*







# DESCRIPTIONS OF TOWNSHIPS







DESCRIPTIONS

OF

SURVEYED TOWNSHIPS

SUBMITTED BY DOMINION LAND SURVEYORS DURING THE SEASON OF

1907-1908

APPENDIX No. 44.

LIST OF TOWNSHIPS DESCRIBED.

EAST OR PRINCIPAL MERIDIAN.		WEST OF PRINCIPAL MERIDIAN— <i>Con.</i>	
Township.	Range.	Township.	Range.
14, 15.....	7	24, 44.....	30
15, 16, 17.....	8	44.....	31
15, 16, 17.....	9	30, 44, 45.....	32
16, 17.....	10		
6, 12, 13, 14, 15, 16, 17 ..	13		
6, 7, 8, 12, 13, 15, 16 ..	14		
1, 12, 15, 16.....	15		
16.....	16		
16.....	17		
WEST OF PRINCIPAL MERIDIAN.		WEST OF SECOND MERIDIAN.	
26, 27, 28.....	1	37, 38, 45.....	1
28.....	2	37, 45.....	2
28.....	3	37, 38, 45.....	3
18, 22, 28.....	4	38, 39, 40, 45.....	4
14, 15, 21, 22, 28.....	5	38, 39, 40, 45.....	5
14, 22.....	6	37, 38, 39, 40, 45 ..	6
22.....	7	39, 40, 45.....	7
22.....	8	45.....	8
21, 25, 26, 28, 29, 32...	10	45 ..	9
25, 26, 28, 32.....	11	38, 40, 45.....	10
26, 28, 32.....	12	38, 39, 40, 45.....	11
26, 28, 32.....	13	41, 42, 43....	12
23, 26, 28, 32.....	14	30, 31, 50, 51, 52.....	15
10, 32.....	15	30, 31, 50, 51, 52.....	16
10, 32, 51 ..	16	1, 2, 30, 51, 52 ..	17
32.....	17	1, 2, 51, 52.....	18
32.....	18	49, 51, 52.....	19
32 ..	19	50, 51, 52. ....	20
41.....	25	50, 52 .....	21
41, 42, 43, 44.....	26	44, 51, 52 .....	22
44.....	27	4, 46, 50, 52 ..	23
44.....	28	4, 51, 52.....	24
44.....	29	9, 51, 52.....	25
		9, 45, 49, 52 .....	26
		9, 41, 42.....	27
		41, 42.....	28
		6, 20, 21, 22.....	29
		4, 5, 6, 17 .....	30



List of Townships Described—Continued.

WEST OF THIRD MERIDIAN.		WEST OF FIFTH MERIDIAN.	
Township.	Range.	Township.	Range.
4, 5, 6, 7, 8, 9, 10, 11, 21, 22, 24, 33, 34, 35, 37, 38, 52	1	13, 14	1
4, 5, 6, 7, 8, 9, 10, 11, 12, 21, 22, 23, 24, 33, 34, 38, 52	2	10, 11	2
5, 11, 12, 51	3	11	3
11, 12, 50, 51	4	20, 21, 22, 44, 47	4
10, 11, 12	5	48, 49, 54, 55, 56	5
11, 12, 34, 35, 48	6	49	6
11, 12, 48, 49	7	54, 55, 57	7
11, 12	8	54	9
11, 12	9	53, 54, 55, 56	10
11, 12	10	53, 54	11
47	11	53, 54	12
11, 12, 49	12	52, 53, 54	13
10, 11, 49	13	52, 53, 54, 73, 75	14
49, 50, 51, 52	14	52, 53, 54, 73, 74, 75, 77	15
49, 50, 51, 52	15	52, 53, 54, 77	16
8, 52	16	51, 52, 53	17
8	17	52, 53, 54	18
8	18	52, 53	19
8	19	52, 53	20
8	20	52, 53, 84	21
8	21	52, 53	22
51, 52, 53, 54	27	52, 53	23
54	28	51, 52, 53	24
		30, 31, 51, 52, 53	25
		31, 32, 52, 53	26
		52, 53	27

WEST OF FOURTH MERIDIAN.		WEST OF SIXTH MERIDIAN.	
4, 27, 28, 29, 30, 31	6	23	2
27, 28	7	77, 78, 79, 80	3
1, 2, 3, 4	8	80	4
1, 2, 3, 4, 60	9	19, 71, 72, 78	6
1	10	19	7
1	11	18	8
1, 7, 8	12	17, 18, 19	9
2, 8, 65, 66	13	17, 18, 19	10
1, 2, 33, 34, 67, 68	14	17, 18	11
29, 30, 33, 34, 66, 67, 68	15	18	12
29, 30, 33, 34	16	18, 19	14
33, 34	17	19	15
29, 30, 31, 32, 33, 34	18	20	18
29, 30, 31, 33, 34, 66, 67, 68	19	20	19
29, 30, 31, 32, 33, 65, 66, 67, 68	20	20, 21	20
29, 30, 31, 65, 67, 68	21	19, 21	21
10, 11, 24, 66, 67, 68	22	16, 20	22
60, 67, 68	23	15, 16, 20, 21	23
10, 13, 65, 66, 67, 68	24	20	24
65	25	17, 22, 23	25
10	29	19, 20, 21, 22	26
		2	29



## SESSIONAL PAPER No. 25b

## DESCRIPTIONS OF TOWNSHIPS.

NOTE.—Numbers of townships are placed in heavy type on the left margin of the pages in the descriptions of townships.

## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 7.*

**14.** The greater portion of the west part of this township is rolling red sand and jackpine ridges while the remainder is poplar bush, tamarack swamp and sloughs. The soil in the tamarack swamps is generally of a quicksand nature. Most of the merchantable timber has been removed to market via Tyndale on the main line of the Canadian Pacific railway. Many old lumber roads are to be found also the almost decomposed remains of the old lumber camps. An old lumber trail was found throughout the length of the west boundary of the township. These are only winter roads impassable in the summer time.—*C. F. Aylsworth, D.L.S., 1907.*

**15.**—The greater portion of this township for two miles south of the Indian reserve is a floating tamarack muskeg, and the greater portion of the balance of this township is rolling jackpine, sand and gravel ridges.—*C. F. Aylsworth, D.L.S., 1907.*

*Range 8.*

**15, 16 and 17.**—My route of approach to the east boundary or townships 17 and 16, range 8, and north boundary of township 15, range 9, was from the east by way of Lac du Bonnet, branch of the Canadian Pacific railway. I believe, however, that these lines may be more easily approached from the Brokenhead settlement on the west. The whole of the east boundary of townships 16 and 17, range 8 passes through an extensive marsh, containing a few scattered tamarack, willow scrub, rushes and long grass. The northern boundary of township 15, range 9 passes through a wooded district, except north of section 31, and the west half of 32 where the line is situated in the marsh. This district is therefore very flat and wet, the only dry portion being the north boundary of sections 33, 34, 35 and 36, township 15, range 9, where the surface is slightly undulating. The only timber occurring upon the above mentioned lines is found on the north boundary of sections 33, 34, 35 and 36, township 15, range 9, where spruce, tamarack and poplar are found, though not in sufficiently large quantities or dimensions to be of great value for lumbering purposes. There is a large amount of hay land extending along the eastern boundary of townships 17 and 16, range 8, and along the north boundary of sections 31 and 32, township 15, range 9, but because of the extremely soft nature of the ground upon which it grows the district is very difficult of access, although it is possible that it may be reached from the Brokenhead settlement. No bodies or streams of fresh water occur along the above mentioned lines, although abundance of surface water is found everywhere throughout the marshy sections. No water-power occurs along these lines. As the city of Winnipeg is only a short distance from this township the climate is very similar in both localities, being comparatively dry with occasional extremes of both heat and cold. It is, however, suitable for the successful growing of all the ordinary Canadian cereals. An abundant supply of fuel can be obtained from the surrounding forest. Coal is not known to exist in the locality. No stone quarries nor minerals of economic value are known to occur. Several species of large game are very plentiful in this district, particularly moose, many fine specimens of which were observed during our survey. A smaller variety of deer, commonly known as jumping deer are also numerous, and black bear are occasionally met with. Ruffed grouse and spruce partridge are comparatively common but few other birds of any description were observed.—*J. W. Tyrrell, D.L.S., 1906.*



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## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 9.*

15. This township is situated about twelve miles south of Fort Alexander and about the same distance northwest of Lac du Bonnet, the terminal point of a short branch of the Canadian Pacific railway, from which point it is most easily accessible. On account of extensive marshes and swamps in the neighbourhood the township is very difficult of access, at any time of the year, except when the swamps are solidly frozen, which does not always occur even in winter, when a great depth of snow falls early in the season. There is nothing in the shape of a travelled highway, or even a well opened bush road into this township, the only means of access being over a winter road cut by the party during my survey. This road leads in a northwesterly direction from Lac du Bonnet into the centre of township 16, range 10, thence directly west to the centre of this township, and from this point in a northerly direction to township 17, range 9. The soil of this township varies from black muck in the western part to clay in the more central districts and sand and boulders in the east. Many central sections when cleared of timber appear to be well suited for general farming purposes, the eastern sections being more hilly and strewn with great boulders rendering the soil less fit for cultivation, but quite suitable for grazing purposes. As above stated, the eastern portion of this township is somewhat hilly. The end of a long gravel ridge, which reaches several miles to the east extends over portions of sections 13, 24 and 25. The summit of this ridge crosses the eastern boundary near the northeast corner of section 13, and is about one hundred feet above the surrounding country. A large portion of this ridge is covered by jackpine timber. The central portion of the township to the west of the above mentioned ridge is covered chiefly by poplar, birch and spruce timber, little of which was found to be of large size. The most westerly tier of sections is composed almost entirely of marshy land, overgrown in part with small tamarack, willow and alder scrub. This marsh even at the date of my survey (February) was still so soft as to barely carry our party, and was quite too soft to carry the teams. Although the greater portion of this township is covered with timber, little was found to be of sufficient size or quality to be of value for milling purposes. A few spruce occur in various places sufficiently large to be sawn into lumber. The same may be said of the jackpine covering the central portion of the eastern tier of sections, but the quantity is too limited to make the township of value as a timber berth. There is one large hay meadow in this township, occupying a portion of sections 22, 23 and 27 in the centre of which is a small open slough. Hay is also found on the most westerly tier of sections in the township, but because of the soft marshy nature of the country on which it grows access to it is very difficult and it will probably be of little value until a system of drainage is established. The only open water occurring in this township is found in a small slough situated upon the northeast quarter of section 22, although an abundance of surface water is found everywhere upon the marshy sections in the western portion of the township. It might be mentioned that some fresh water springs were observed on the northern slope of the centre ridge in sections 25, 24 and 13. No water-power exists in this township. As this township is close to the city of Winnipeg, the climate is very similar in both localities, being comparatively dry with occasional extremes both of heat and cold. It is however not such as to prevent the successful growing of all the ordinary Canadian cereals. The township is abundantly supplied with fuel from the forest. Coal is not known to exist in the locality, but there is an abundance of wood in all parts of the township. No rock exposures are known to occur in this township from which building stone might be quarried. No minerals of economic value are known to occur. Several species of large game are very common in this township and surrounding district, particularly moose, many fine specimens of which were observed, during our survey. A smaller variety of deer, commonly known as jumping



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## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 9—Continued.*

deer, are also numerous, while black bear are occasionally met with. Ruffed grouse and spruce partridge are comparatively common, but few other birds of any kind were observed.—*J. W. Tyrrell, D.L.S., 1906.*

15.—There is no summer road at present reaching this township but a good winter road crosses from Milner siding on the east to Brokenhead river country on the west passing across the southern part of the township. On May 24 this road was frozen solid where it crossed the muskegs. The only good land there is exists in isolated sections. The township is mostly swampy except some very stony ridges of sand. Most of the surface is covered with timber ranging from scrub and deadfall to large poplar and spruce. There are some hay meadows in the northeast corner of the township and also near the west boundary along the edges of marshes existing there. The water is all fresh. There are some small creeks but they were not located or noticed in the winter as the snow was deep. They flow from the muskegs westerly into the marshes. No stone, minerals, coal or water-powers were observed. Moose, deer, chicken, wolves and small game are found.—*Geo. H. Watt, D.L.S., 1906.*

15, 16 and 17.—My route of approach to the east boundary of townships 17 and 16, range 8 and north boundary of township 15, range 9, was from the east by way of Lac du Bonnet, branch of the Canadian Pacific railway. I believe, however, that these lines may be more easily approached from the Brokenhead settlement on the west. The whole of the east boundary of townships 16 and 17, range 8, passes through an extensive marsh, containing a few scattered tamarack, willow scrub, rushes and long grass. The northern boundary of township 15, range 9 passes through a wooded district, except north of section 31, and the west half of 32 where the line is situated in the marsh. This district is therefore very flat and wet, the only dry portion being the north boundary of sections 33, 34 35 and 36, township 15, range 9, where the surface is slightly undulating. The only timber occurring upon the above mentioned lines is found on the north boundary of sections 33, 34, 35 and 36, township 15, range 9, where spruce, tamarack and poplar are found, though not in sufficiently large quantities or dimensions to be of great value for lumbering purposes. There is a large amount of hay land extending along the eastern boundary of townships 17 and 16, range 8, and along the north boundary of sections 31 and 32, township 15, range 9, but because of the extremely soft nature of the ground upon which it grows the district is very difficult of access, although it is possible that it may be reached from the Brokenhead settlement. No bodies or streams of fresh water occur along the above mentioned lines, although abundance of surface water is found everywhere throughout the marshy sections. No water-power occurs along these lines. As the city of Winnipeg is only a short distance from this township the climate is very similar in both localities, being comparatively dry with occasional extremes of both heat and cold. It is, however, suitable for the successful growing of all the ordinary Canadian cereals. An abundant supply of fuel can be obtained from the surrounding forest. Coal is not known to exist in the locality. No stone quarries nor minerals of economic value are known to occur. Several species of large game are very plentiful in this district, particularly moose, many fine specimens of which were observed during the survey. A smaller variety of deer, commonly known as jumping deer are also numerous and black bear are occasionally met with. Ruffed grouse and spruce partridge are comparatively common, but few other birds of any description were observed.—*J. W. Tyrrell, D.L.S., 1906.*

17.—Because of extensive swamps and muskegs, situated both to the east and west access to the township is very difficult except during the winter season,



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## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 9—Continued.*

when the swamps are solidly frozen. During the past winter while I was engaged in the survey of this township I found that the frost did not penetrate these swamps, owing to the deep snow occurring early in the season and they were but slightly frozen throughout the entire winter. Consequently it was with the greatest difficulty that I was able to gain access to the various parts of the township having to make roads by tramping the snow with snowshoes and allowing it to freeze solidly for some days previous to our passing over it. The township is situated about six miles directly south of Fort Alexander and when the swamps are frozen it is very easily reached from that place. The soil of the eastern portion of this township is composed chiefly of heavy clay, while the western part consists almost entirely of soft muskeg or marsh, which in some places is grown up with small scrub, tamarack and willow, while other parts are more open, containing only tall rushes and long bluejoint grass, which in some places was observed to be eight feet high. There is a considerable area of land in the eastern sections of the township well situated for general agricultural purposes, after being cleared of timber, but the whole western portion of the township is utterly unfit, in its present state, for occupation in any capacity. It seems quite probable, however, that even this marshy section of country can be drained as it is situated comparatively near Winnipeg river and at considerable height above it, and the construction of a drainage system, therefore, might change this marsh area into very valuable land. The surface of the eastern portion of this township is more or less rolling and hilly in some places, but the western portion comprises one vast flat, marsh grown up, as already stated with tamarack, willow and rushes. The distribution of timber corresponds practically to that of the dry land, and thus occurs upon the eastern sections of the township. The chief variety is white poplar, although a few spruce and tamarack, large enough for lumber occur scattered throughout the various sections of the township. As a whole, the township may be said to contain a comparatively small amount of valuable timber, by far the greater portion being covered with small tamarack and black spruce. A large quantity of bluejoint and other varieties of grass occur upon the western half of this township, but under present conditions it is of little or no value, as during the ordinary seasons access to it is quite impossible. On the west part of section 22 I discovered a small stack of hay, which had been cut several years previously but could not be removed owing to the land being too soft to admit of the passage of horses or wagons. No lakes or fresh water streams of any importance occur upon this township, but almost the entire surface is abundantly supplied with marsh or swamp water. No water-power occurs in this township. As the city of Winnipeg is only a short distance from this township the climate is very similar in both localities, being comparatively dry with occasional extremes both of heat and cold. It does not however prevent the successful growing of all the ordinary Canadian cereals. The township is abundantly supplied with fuel from the forest. Coal is not known to exist in the locality but there is an abundance of wood in all parts of the township. Few rock exposures occur in this township, as the greater part of the surface is composed of swamp or marsh. A few bluffs of granite however, were noticed in some of the eastern sections, and it is possible that from these good building stone might be obtained. No minerals of economic value are known to occur. Several species of large game are very abundant in this township and surrounding district, particularly moose, many fine specimens of which were observed during our survey. A smaller variety of deer commonly known as jumping deer is also very common and black deer are occasionally met with. Ruffed grouse and spruce partridge are comparatively common, but few other birds of any description were observed.—*J. W. Tyrrell, D.L.S., 1906.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 10.*

16.—This township is situated about five miles northwest of Lac du Bonnet, the terminal point of a short branch of the Canadian Pacific railway and it is most easily approached by means of a winter road, from that place. On account of more extensive marshes and swamps in the neighbourhood, the township is more or less difficult of access, at any time of the year, except when the swamps are solidly frozen, which does not always occur even in winter, when a great depth of snow falls early in the season. There is nothing in the shape of a travelled highway or even a well opened bush road into this township, the only means of access being over a winter road cut by the party during my survey. This road leads in a northerly direction from Lac du Bonnet into the centre of the township. The soil varies from black muck and peat in the east to sand and boulders in the west and central sections, most of the latter being traversed by a high sandy ridge covered chiefly by jackpine timber. The greater portion of this township is entirely too wet in its present condition to render it suitable for settlement, although when a system of drainage is introduced the greater portion of it will doubtless be found quite suitable for cultivation and the raising of all ordinary farm produce. The central and western sections of this township are occupied by a high gravel ridge, the surface of which is strewn with huge boulders, and is otherwise covered with jackpine forest. The eastern and southern portions are chiefly flat and marshy and too wet in their present condition for cultivation. There is a very considerable amount of jackpine, spruce and tamarack timber occurring upon the sandy ridge occupying the west central sections of the township but the remainder is wooded with small poplar and tamarack scrub. A considerable amount of marsh hay occurs in the swampy sections of the eastern part of the township, although on account of the extremely wet, soft character of the ground upon which it grows it is of little value because access to it is very difficult. No bodies or streams of open water were observed in this township, although large quantities of surface water occur everywhere upon the marshy lands to the east and south. No water-power exists in the township. As the city of Winnipeg is only a short distance from the township the climate is very similar in both localities, being comparatively dry with occasional extremes of heat and cold. This does not, however, prevent the successful growing of all the ordinary Canadian cereals. The township is abundantly supplied with fuel from the forest. Coal is not known to exist in the locality, but there is abundance of wood in all parts of the township. Several exposures of granite occur upon sections 2 and 3 of this township and from these, as well as from enormous boulders scattered over the sandy ridge occupying the central and western sections of the township it is quite probable that a good quality of building stone may be obtained. No minerals of economic value are known to occur. Several species of large game are very numerous in this township and surrounding district, particularly moose, many fine specimens of which were observed during our survey. A smaller variety of deer, commonly known as jumping deer, is also plentiful while black bear are occasionally met with. Ruffed grouse and spruce partridge are comparatively common, but few other birds of any description were observed.—*J. W. Tyrrell, D.L.S., 1906.*

17.—This township is situated about eighteen miles east of the south end of lake Winnipeg, thirty miles north of the main line of the Canadian Pacific railway and twelve miles northwest of Lac du Bonnet, the terminus of a short branch of that railway. Access to this township is by no means easy, not on account of its remoteness, but on account of it being almost completely hemmed in by wide expanses of muskeg, too soft, unless frozen, to admit of being crossed by wagons or pack horses. It can be reached from Fort Alexander, twelve miles northwest by what is known as



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## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 10—Continued.*

Fort Alexander trail, which traverses sections 35, 36, 25, 24 and 13, but I found it more convenient to reach the township from Lac du Bonnet, and in doing so had to cut a bush road along the bank of Winnipeg river as far as section 9, township 17, range 11., where we struck the winter road to Fort Alexander and followed it to the east boundary of the township, though this road had also to be recut to admit of the passage of the wagons. Although two weeks were spent in cutting this road, there is still no through summer highway from Lac du Bonnet, as in many places we followed the shore of the river or lake, which would be under water during the earlier part of the summer. The south and west sections of this township may be described generally as swampy, and the soil varying from a half decomposed moss to a rich black muck. The northeast portion of this township, however, is somewhat higher and the soil is composed chiefly of a light sandy clay of fairly good quality. A large portion of this township being composed of muskeg is very flat, but the northeast sections toward Winnipeg river are more rolling, with enormous rock exposures and are generally heavily timbered with white poplar, spruce, balsam, tamarack, ash and birch, while the southwest sections are wooded chiefly with tamarack, black spruce, willow and alder scrub. There is a considerable amount of good spruce and tamarack timber found throughout the eastern half of the township except in sections 2 and 3. The spruce varies in size from about eight to twenty-four inches in diameter while tamarack is found as large as twenty inches in diameter. Though of less value white poplar predominates and is occasionally found as large as twenty inches in diameter. There is very little hay land in this township, as it is mostly heavily timbered. A considerable amount of hay and long coarse grass occur in many of the western sections of this township, but the land is entirely too wet to admit of hay being cut. Winnipeg river is the chief water supply of this township. It flows through sections 25 and 26, and is a very large stream. The greater part of the township is very wet which is a great drawback towards its occupation. No water-power exists in this township. There are several falls along Winnipeg river but none within this township. As the city of Winnipeg is only a short distance from this township the climate is very similar in both localities being comparatively dry with occasional extremes both of heat and cold. This does not, however, prevent the successful growing of all the ordinary Canadian cereals. The township is abundantly supplied with fuel from the forest. Coal is not known to exist in the locality but there is abundance of wood in all parts of the township. Enormous exposures of granite occur in some of the northeast sections of this township and although no quarries have yet been opened up it seems quite probable that a fine quality of building stone might be available. No minerals of economic value are known to exist in this township. Several species of large game are very numerous in this township and surrounding district, particularly moose, many fine specimens of which were observed during our survey. A smaller variety of deer, commonly known as jumping deer are also plentiful, and black bear are occasionally met with. Ruffed grouse and spruce partridge are comparatively common, but few other birds of any description were observed.—*J. W. Tyrrell, D.L.S., 1906.*

*Range 13.*

6.—All the land in this township ranks as third class. The soil is mostly black loam with a sandy subsoil, but the township is made up mostly of spruce and tamarack swamps covered with heavy bush and these, if cleared and drained, would make good land for farming purposes. The surface is nearly all level and covered with spruce and tamarack, but along Whitemouth river, which runs through the south half



## SESSIONAL PAPER No. 25b

## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 13—Continued.*

of the township, there is considerable poplar and thick willow. The spruce, tamarack and poplar range in size from four to ten inches in diameter. The spruce and tamarack is equally distributed throughout the whole township, but the poplar is found only along Whitemouth river. Hay can be cut all along the banks of the river. The water is all of first class quality and is very plentiful. If not found on the surface it can easily be had by digging a few feet. The water in Whitemouth river is first class. There are no water-powers available. The climate is the general Manitoba climate, with no indication of summer frosts. Fuel is very plentiful and can be had all through this district, consisting of spruce, tamarack, poplar and jackpine. There are no coal or lignite veins, stone quarries or minerals of any kind. The only game to be found is moose and bear, which are very plentiful. There are no trails running through the township, but the Dawson road is a few miles to the north of the township, running to Ste. Anne, a town on the Canadian Northern railway, where there are stores, schools, post office, &c.—*John Molloy, D.L.S., 1906.*

12.—(*Base line*)—Starting from Whitemouth we crossed Whitemouth river by a bridge about one-half mile south of the village, and followed a good road east and north till we reached a Swede's house at the north boundary of township 11, range 12. Here the good road ended and from this point we followed the north boundary of the township through one and one-half miles of muskeg, where we had to put brush across the trail. We crossed Bog river by means of a bridge which we built, and from there we turned northeast following a trail which struck the east boundary of township 12, range 12, just south of the northeast corner of section 12. We followed this east boundary north to within three-quarters of a mile of where our survey began, which was as near as we could get to it with horses on account of muskeg. The land all along this base line is entirely unfit for agriculture. Moose, rabbits and prairie chickens were plentiful. No minerals of economic value were found. The climate is similar to that of other parts of Manitoba. The country along the north boundary of this township is muskeg, broken by numerous rocky ridges from twenty to sixty feet high. It has been swept by fire and is now covered by dead pitchpine and poplar, heavy windfall and small green poplar, willow and pitchpine. Little Rennie river crosses the north boundary of section 31, flowing northwest. There are no water-powers. Some hay could be cut near the river.—*B. J. Saunders, D.L.S., 1906.*

13.—The township may be reached by a sleigh road from Whitemouth in winter, or in summer by boat or canoe on Winnipeg, Shell and Little Rennie rivers. Large areas of good soil are not to be found. The surface of the southern two-thirds of the township is, generally speaking, rough and rugged, with bare granite hills or knolls protruding from the muskeg. The slopes of the rocky ridges are timbered with second growth spruce, poplar and jackpine, all standing in a mass of deadfall and upturned roots. In the northern part of the township there are some large muskegs with practically no valuable timber. On the higher ground a few spruce may be found scattered through the woods, which are mostly poplar with everywhere a tangled mass of maple, hazel and birch undergrowth. Along Little Rennie river in the east half of the township there are good hay meadows, some of which are liable to be flooded when Winnipeg river rises in the late summer. Fresh water is everywhere plentiful. The Little Rennie is navigable for boats drawing three feet of water for about ten miles in this township, where two falls occur, one six and the other about fourteen feet high. The river is from sixty to two hundred feet wide and has little current. There is very little difference between the level of Winnipeg river and that of this



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## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 13—Continued.*

river where it crosses section 8, that is, in ordinary late summer levels. Rock exposed is everywhere the pink granite of northern and Western Ontario. No minerals were seen. Bear, moose, caribou and deer are plentiful; also pike and pickerel in the river, and countless numbers of ducks in the fall of the year.—*Geo. H. Watt, D.L.S., 1907.*

14.—This township may be reached by canoe on Winnipeg river either from Kenora or Lac du Bonnet. The only soil of any value is in small strips or areas along the riverside. The surface is everywhere timbered, but some has been overrun by fire and brulé, and deadfall in the northern part of the township is most difficult to travel over. The timber is principally poplar and jackpine, with thick growth of underbrush everywhere. There is no hay in this township. The water is everywhere good especially in Winnipeg river, which is a beautiful stream. There are no water-powers, stone quarries or minerals. The climate seems to be good, no summer frosts being experienced. Game is plentiful, moose, caribou, deer and bear having at different times been seen by my party. Small game and wildfowl are also to be found in season.—*Geo. H. Watt, D.L.S., 1907.*

15.—The township is crossed by the tramway being built by the city of Winnipeg, which crosses the township from west to east along the north interior chord. The northerly third of the township is mostly burned over but the remainder is timbered with fair sized poplar, spruce, birch and jackpine of fair size. The surface is everywhere broken by rock ridges covered with jackpine, some of them burned over. Between the ridges where there is no muskeg there is mostly clay soil supporting a heavy growth of poplar and birch, with dense underbrush. The soil is good but areas of it are so much broken by ridges of rock that for farming purposes the township is of very little value. There is little hay though water everywhere in creeks and in Rice lake is fresh, and good to drink. I know of no minerals, stone quarries or water-powers. Moose, deer, caribou, bear, lynx and wolves are numerous.—*Geo. H. Watt, D.L.S., 1907.*

16.—From Whitemouth we proceeded by a good winter road to the village of Lac du Bonnet. Thence we followed a well travelled road, north, along the west bank of Lac du Bonnet, for about five miles. From this point we travelled across Lac du Bonnet to the northeast corner of the lake, where our survey began. On account of the great depth of snow it was impossible to judge as to the mineral resources of the country. A few moose were seen and many fresh tracks were noticed. Coyotes, rabbits and porcupines were also seen. The climate is similar to that of other parts of Manitoba. The country along the north boundary of township 16, range 13 is mostly rock with some low ground and muskeg and is totally unfit for agriculture. The surface is rolling and is heavily timbered with good spruce and poplar averaging about ten inches in diameter. Lac du Bonnet extends into the northwest corner of the township and Pinawa channel of Winnipeg river flows up the west side. The water is fresh and good and free from alkaline substances. Eight or ten miles to the south of Pinawa channel, are rapids and falls which are suitable for the development of power.—*B. J. Saunders, D.L.S., 1906.*

16.—This township is broken by Lac du Bonnet and may be reached by boat or canoe from the lake, or the northern part of the township may be reached by Oiseau river route and the southern part by canoe on the creek that flows out of Rice lake and empties into Lee river. There is very little soil of any value as such. There is a strip of poplar country bordering on the lake which might be tilled if the woods



## SESSIONAL PAPER No. 25b

## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 13—Continued.*

were cleared off. The surface is rough—much broken by granite ridges—some of them very abrupt and steep. The timber is mostly poplar, jackpine and spruce generally small sized, with occasional heavy woods. The southern part of the township has been burned bare and is covered with second growth timber and scrub. I do not think there is any timber large enough for ties. There is little or no hay to be found. The water is everywhere good and fresh. There are no water-powers. I have seen no stone quarries or minerals of any kind. Game abounds, moose, deer, caribou, bears, lynx, &c., and are often seen in season. Wolves are plentiful this winter.—*Geo. H. Watt, D.L.S., 1907.*

17.—The township may be reached by boat or canoe from Lac du Bonnet which encroaches on the southwest corner of the township and Bird or Oiseau river, crosses it from east to west in the southern third of the township. A small quantity of hay may be cut at the mouth of the river. The surface of the country is rough, broken by rocky ridges. Between these in the northwestern part of the township there are spruce and tamarack muskegs. In other parts of the township the wood is mostly poplar and birch. There is everywhere dense scrub of maple, hazel and willow, and along the creeks, which are very small, alder swamps. There might be some homesteads located here, but none would be very large on account of the rocky ridges. The water is everywhere fresh and the climate good. About ten years ago there was a rush of gold seekers to this part of the country, and there is much evidence of the claims which were staked out there still to be found. Game consists of moose, deer, bear and furbearing animals. Geese and ducks are plentiful in season. Wolves, large and small are also found.—*Geo. H. Watt, D.L.S., 1907.*

*Range 14.*

6.—The soil in this township is mostly black loam, but as the township is nearly all spruce and tamarack swamps, the soil is only fourth class. The whole of the township is covered with bush consisting principally of spruce and tamarack from three to nine inches in diameter, equally distributed throughout the township. There is very little hay to be found and no water-powers, stone quarries, coal or lignite veins. The water is all of first class quality and can be had in any quantity all over the township at any time of the year. There are two small lakes on the north boundary of section 20 and one large lake on the north boundary entering into township 7. Fuel is very plentiful and either spruce or tamarack can be had in all parts of the township. Moose and black bear are very plentiful all through this section of country. The Dawson road leading to Ste. Anne, a station on the Canadian Northern railway, passes through the southern portion of township 7, range 14, in a northerly direction.—*John Molloy, D.L.S., 1906.*

7.—The soil in this township is mostly black loam or clay, but on account of its being nearly all a spruce and tamarack swamp, the greater part of which is covered with water, the land is useless for farming purposes. The whole of the township is covered with heavy bush, mostly spruce and tamarack, equally distributed, and averaging about seven inches in diameter. There is little or no hay to be found except along Birch river, which flows through the western part of the township in a northerly direction. All the water throughout the township is of first class quality, and can be had in any part at any time of the year without digging. There are no water powers, stone quarries, coal or lignite veins to be found. Wood is very plentiful, and can be had in large quantities all through the district. Moose and black bear



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## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 14—Continued.*

are about the only game found. The Dawson road passes through the southern part of the township and runs to Ste. Anne, a station on the Canadian Northern railway, where there are churches, stores, a post office, schools, &c.—*John Molloy, D.L.S., 1903.*

8. There is very little land in this township fit for farming or grazing purposes, as it consists principally of spruce and tamarack swamp, and parts of it are very stony. The soil in the swamps is nearly all black or sandy loam. Nearly all of the township is thickly timbered, with principally spruce and tamarack, with some cedar and poplar about equally distributed, and ranging in diameter from four to ten inches. All the water to be found is of first class quality, and can be had in almost any part of the township at any time of the year without digging. Birch river, a stream about fifty feet wide, enters the township in section 1, and runs in a westerly direction through sections 1, 2, 3 and 4. Fuel is very plentiful all through this section of country, consisting chiefly of spruce and tamarack. There are no stone quarries, coal or lignite veins to be found. The climate is the general Manitoba climate, without any indication of summer frosts. Moose, caribou and black bear are very plentiful. There are no trails of any kind leading through the township, but the Dawson road running from the village of Ste. Anne, passes about four miles to the south, running to the eastern boundary of the province.—*John Molloy, D.L.S., 1907.*

12.—(*Base line*).—All the north boundary of this township is rough, rocky country, interspersed with muskegs. The surface has been swept by fire and is now covered with dead, standing and fallen timber and small green pitch pine. Whiteshell river crosses the north boundary of section 36. South of the line it expands into a lake about two miles wide, which extends into range 15. There are no water-powers in this township.—*B. J. Saunders, D.L.S., 1906.*

13.—This township may be reached by canoe from Lac du Bonnet via (1) Winnipeg river, (2) Whiteshell river and little Rennie river. The township is, as a whole, unfit for settlement, as the greater part has been burned over, and only remnants of the timbered area remain in isolated places. The surface is a succession of rocky ridges up to one hundred feet in height, some rising perpendicularly for fifty feet. Along the northern boundary there is some fairly level land heavily timbered with poplar, jackpine and spruce. Along both Whiteshell and Little Rennie rivers considerable areas of hay lands exist, but I believe in years of high water on Winnipeg river a certain amount is inundated. In the rivers are found jackfish, whitefish, sturgeon and pickerel, all of which are plentiful. Water is everywhere and fresh. There are no economic minerals, stone quarries or valuable water-powers that I know of. Moose, deer, bear, caribou, lynx and wolves are found.—*Geo. H. Watt, D.L.S., 1907.*

15.—This township was reached from township 15, range 15, by travelling over the ice of lake No. 3 and across Winnipeg river immediately above Pointe du Bois falls. The only good soil in this township occurs in small patches between the rocky ridges in the north half of the township, and this is not suited for agricultural purposes. A great deal of the west half of the township is swamp and muskeg. The surface is covered with jackpine, spruce, tamarack, poplar, birch and balsam. The swamps are wooded with spruce and tamarack from one to eight inches in diameter, and the ridges with jackpine, spruce, poplar, birch and balsam from three to twelve inches, but no timber suitable for lumbering purposes is found. No hay is found. Fresh water is abundant in the marshes, lakes and swamps. Winnipeg river runs southerly through the eastern tier of sections, the shores are high and rocky, and the land is not liable to be flooded. Pointe du Bois falls are in the centre of section



## SESSIONAL PAPER No. 25b

## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 14—Continued.*

36. Here the corporation of the city of Winnipeg is developing power. By using the rapids below the falls and by the construction of a dam, the effective head will be forty-five feet and the proposed development is 40,000 horsepower. At the time of survey (March), a small camp had been erected at the site and a portion of the land cleared. Slave falls are situated in the southwest corner of section 12. Here the river passes between two rocks, and is less than 300 feet wide. A considerable amount of power could easily be developed here by the construction of a dam. The climate at the time of the survey was the ordinary winter weather of Manitoba. Fuel is everywhere abundant. No stone quarries nor minerals were found. Game consists of moose and caribou.—*J. L. R. Parsons, 1907.*

16.—The north boundary of township 16, range 14, runs through rock, broken by muskeg. The surface is rolling and is covered chiefly with poplar, spruce and pitch-pine, averaging about eight inches in diameter. The country is entirely unfitted for agriculture. Winnipeg river flows through the southeast corner of the township. This part of the river is a succession of falls and rapids, rendering it particularly suited for the development of power.—*B. J. Saunders, D.L.S., 1906.*

16. This township was reached from Lac du Bonnet station on the Canadian Pacific railway by travelling on the ice across Lac du Bonnet to the mouth of Oiseau river, thence up the river for two miles; from there by my own trail eastward to the northwest corner of the township. It is a good winter trail. Practically no soil occurs in the township. The swamps and muskegs being rock-bound, cannot be drained, and therefore are not suitable for agricultural purposes. The greater part of the township is composed of rocky ridges. The surface is covered with jackpine, spruce, tamarack, poplar and birch. The swamps are wooded with spruce and tamarack from one to eight inches in diameter, the ridges with jackpine of a similar size, and scattered clumps of poplar and birch from three to ten inches in diameter. Much windfall and fire-killed timber occurs, but none suitable for lumbering purposes. No hay is found. Fresh water is abundant in the marshes, lakes and swamps. The Winnipeg river crosses the corner of the township in sections 12, 1 and 2. This part of the river is in the form of a lake-like expansion, with numerous islands and high rocky shores. The land is not liable to flooding to any extent. Contours have been taken, however, to determine the flooding areas by the corporation of the city of Winnipeg, in connection with the power development at Pointe du Bois falls in section 36, township 15, range 14. The weather during the survey (January) was the usual winter weather of Manitoba, the lowest point reached by the thermometer being 53 degrees. Fuel is everywhere available in the form of windfall, dead and fire-killed trees. No coal was found. Rock 'in place' is everywhere to be found, but no quarry stone nor minerals were observed. Moose, lynx and mink are the only game.—*J. L. R. Parsons, D.L.S., 1907.*

*Range 15.*

1. The soil in this township would nearly all rank as second class, being a black or sandy loam of good depth. The whole of the township is heavily timbered, with the exception of parts of sections 29, 30, 31 and 32. There is a large, open muskeg in these sections running in a northeasterly direction, with an average depth of water of about two feet. The soil would all be suitable for farming purposes when cleared of the timber. The timber is about equally distributed throughout the township, and is of all sizes, from five to fifteen inches in diameter. Poplar, spruce and tamarack are about the only kinds of timber to be found, although there is some small birch.



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## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 15—Continued.*

All the water is of first class quality, and can be had in almost any part of the township by digging a few feet. There are no creeks or streams to be found. The land is not liable to be flooded. The climate is the general Manitoba climate, with no indication of summer frosts. Fuel is very plentiful all through this section of country, consisting principally of spruce, tamarack and poplar. There are no coal or lignite veins, stone quarries or minerals. Moose and jumping deer are about the only kinds of game to be found, and are plentiful. The main line of the Canadian Northern railway crosses the township in a straight line from the northeast corner of section 7 to the northeast corner of section 1. The railway siding, Gravel Pit spur, is just on the east boundary of section 12, where there is a section house. The town of Sprague, where there is a station, store, postoffice, school, &c., is about three miles west of this township.—*John Molloy, D.L.S., 1907.*

12. (*Base line.*)—The north boundary of this township is rough, rocky country, interspersed with muskeg. The surface is covered, for the most part, with small pitchpine, poplar, willow, spruce and tamarack, but near the lake there is some poplar eight to fourteen inches in diameter. There are two lakes in the northwest corner of the township, which are expansions of Whiteshell river, flowing northwesterly through this township. Between these two lakes are two falls about five feet in height, and north of the base line there are rapids.—*B. J. Saunders, D.L.S., 1906.*

15. This township was reached by my own trail southerly through the centre of township 16, range 15. There is very little good soil in the township, the greater part being composed of rocky ridges. Between these ridges are swamps and muskegs in which the soil is chiefly black loam on a clay sub-soil. There is no farm land. The surface is well wooded, being covered with jackpine, spruce, tamarack, poplar and birch. The swamps are wooded with spruce and tamarack from one to eight inches in diameter; the ridges with jackpine and scattered poplar, birch and balsam from three to ten inches in diameter. The shores of the neighbouring lakes usually support timber of larger and better quality, but no timber suitable for lumbering purposes is found. There is no hay in this locality. Fresh water is everywhere obtainable in the swamps, muskegs and numerous lakes. Winnipeg river flows through the west sides of sections 31, 30 and 19. The west boundary of section 19 crosses Eightfoot falls. Here the river passes between two high rocks, and a considerable amount of power could be easily developed by a dam which would increase the head to fifteen or twenty feet. The climate is the ordinary weather of Manitoba. Fuel is abundant in the form of windfall, dead and fire-killed trees, but no coal was found. Neither stone quarries nor minerals were observed. Moose, caribou, lynx, mink and fisher are the only game.—*J. L. R. Parsons, D.L.S., 1907.*

16. This township was reached by way of Mr. B. J. Saunders' trail along the north boundary of township 16, range 14, thence over the ice of lake Saunders. This is a good winter trail. There is only a small proportion of soil in the township, the greater part being composed of rocky ridges. Between these ridges are swamps and muskegs in which the soil is chiefly black loam on a clay subsoil. The surface is covered with jackpine, spruce, tamarack, poplar and birch. The swamps are wooded with spruce and tamarack from one to eight inches in diameter. The ridges with jackpine of similar dimensions, and with scattered clumps of poplar and birch from three to ten inches in diameter. The land along the right bank of Winnipeg river supports a good growth of poplar, spruce and birch from four to twelve inches in diameter, but no timber suitable for lumbering purposes occurs. No hay is found



## SESSIONAL PAPER No. 25b

## TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

*Range 15—Continued.*

in this township. Fresh water is abundant in the marshes, swamps and creeks. Winnipeg river crosses the township almost diagonally from northeast to southwest, where it takes the form of several lake-like expansions containing a number of islands. Lamprey falls occurs in section 23. The descent is about twelve feet but it is not well suited for the development of power, since there are only short rapids above and below the falls, and the present head may be decreased when the dam at Pointe du Bois is completed. No other water-powers occur. The weather during the survey (February) was the usual winter weather of Manitoba. Fuel is everywhere available in the form of windfall, dead and fire-killed trees. No coal was found. Rock in place is everywhere exposed on the surface, but no quarry stone nor minerals were found. Moose, caribou, lynx and mink are the only game.—*J. L. R. Parsons, D.L.S., 1907.*

16. The country along the north boundary of township 16, range 15, is mostly rock, broken by some muskeg and low ground, and is quite unsuitable for agriculture. The surface is rolling and is covered chiefly with poplar, pitch pine, spruce and birch, averaging from six to eight inches in diameter. There is a lake in the northwest corner of the township. Winnipeg river enters at the east of the township, about one and one-half miles south of the north boundary, and flowing southwest leaves the township at the southwest corner. There is a large fall about the centre of the township, from which considerable power could be developed.—*B. J. Saunders, D.L.S., 1906.*

*Range 16.*

16. The country along the north boundary of township 16, range 16, is rock, broken by muskeg and lakes, and is not suitable for agriculture. The surface is rolling, and is covered with small pitchpine, spruce, poplar and balsam of no marketable value. Winnipeg river flows across the township from east to west, leaving the township about one and one-half miles south of the north boundary. It is not so suitable here for the development of power as it is farther west.—*B. J. Saunders, D.L.S., 1907.*

*Range 17.*

16. The country along the north boundary of township 16, range 17, is mostly rock, broken by numerous lakes, and is totally unfit for agriculture. The surface is hilly and rises in places seventy-five feet above the lakes. The north boundary of sections 23, 24, 35 and 36 crosses five lakes, a large lake being situated in the northeast corner. The timber is mostly small, but there is some poplar, birch, tamarack, spruce and pitchpine, averaging nine inches in diameter. Winnipeg river flows across the southwest corner of the township. A few miles farther southeast along the river, there are some rapids from which power could be developed.—*B. J. Saunders, D.L.S., 1906.*

## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 1.*

26. On the east boundary of sections 1, 12, 13, 25 and 36 of this township the line passes through small poplar and jackpine bush. The east boundary of section 24 falls in a tamarack swamp, which extends for a considerable distance to the west of the line, but only about half a mile to the east of the line. The soil is a shallow layer of clay and gravel on limestone, except in the swamp mentioned above, where black loam occurs.—*Wm. Christie, D.L.S., 1907.*



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## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 1—Continued.*

27. On the east boundary of section 12 and the south of section 13 of this township the line continues through small poplar and jackpine. The soil in these sections is black loam about two inches deep on limestone. In the n r h half of section 13, sections 24, 25 and 36 the line passes through a large muskeg and tamarack swamp, which extends on the west to Fisher river a distance of about three and one-half miles. To the east of the line it extends in a southeasterly direction for several miles. When we came to the muskeg (on November 9) it was too soft for a man to walk across. It took the whole party a little more than a week to cut a road and move camp around it. Fortunately by the time we got the camp around to the north side the muskeg was frozen sufficiently hard to allow a man to walk over it, and we were able to get the line across without difficulty.—*Wm. Christie, D.L.S., 1907.*

28. The muskeg mentioned in township 27 extends into section 1 of this township. Fisher river crosses the line on the east boundary of section 24. The portion of the township south of the river is covered with small poplar, willow and spruce with some swamps and hay marshes. North of the river the timber is larger, poplar up to ten inches in diameter occurring. Some large marshes are also crossed north of the river in sections 24, 25 and 36. In this township the line also crosses Fisher river, Indian reserve (No. 44). I connected my survey with that of the reserve. The country here appears well adapted to stock raising as abundance of hay can usually be obtained from the marshes. Last year, however, most of the hay land was under water. It would be an easy matter, however, to drain these swamps into Fisher river.—*Wm. Christie, D.L.S., 1907.*

28. (*North outline.*)—In this township the land is gently undulating, consisting of low ridges covered with poplar up to six inches in diameter, alternating with tamarack swamps, muskegs and hay marshes. A small lake occurs in section 5, township 29, range 1. The soil is chiefly black loam on clay subsoil, but gravel occurs on the north boundary of section 35.—*Wm. Christie, D.L.S., 1907.*

*Range 2.*

28. This township consists of a series of low, flat ridges, covered with poplar and spruce, with here and there a few birch and jackpine, alternating with tamarack swamps, marshes and hay lands. A small lake, which I named Colonsay, occurs in sections 33 and 32. The soil is chiefly black loam on clay subsoil, but limestone occurs on the north boundary of section 34, and drift boulders are quite plentiful on all the dry land.—*Wm. Christie, D.L.S., 1907.*

*Range 3.*

28. The general character of this township is similar to that in range 2, consisting of flat ridges timbered with poplar, spruce and tamarack up to eight inches in diameter, separated by tamarack swamps, marshes and hay lands. A small lake occurs in sections 36 and 35. Mantagao river crosses the line in section 34, flowing almost due north. This stream is about thirty feet wide at the line. On either side of this stream is a strip of marsh and hay meadow from a quarter to half a mile in width and close to the river banks are tall reeds. The soil is chiefly black loam on clay subsoil.—*Wm. Christie, D.L.S., 1907.*



## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 4.*

18. As Oak Point, a station on the Canadian Northern railway, is situated in this township, we travelled over this country by fair wagon roads during nearly all season. All homesteads are taken by Icelanders, an intelligent and industrious people. The soil is of good quality being generally of black loam with a stone and gravel subsoil. Although this township is settled for twenty years, the owners of lands do not seem to appreciate the quality of the soil for farming. In its present condition, the land is better suited for cattle raising and dairying. The surface is level and is covered with scrub, patches of poplar, a few oak, sloughs, hay marshes and prairie where they have always plenty of good hay, even in wet seasons. All valuable timber has been cut for building and fencing. Poplar, the average of which is of poor quality, is the only fuel. Good water is plentiful and can be obtained easily by digging wells without great expense. Prairie chicken is the only game in this township, but ducks are plentiful around lake Manitoba. No mineral or waterpower was found.—*C. E. Bourgault, D.L.S., 1907. . .*

22. The general aspect of this township is swampy and at the time of survey (September) nearly all covered with water. In wet seasons settlers cannot depend on the swamps to obtain a supply of hay to feed their cattle during the winter. There are some high ridges where the soil is composed of a few inches of black loam with sand and gravel subsoil, but they are covered with poplar and windfall. Moose and deer are quite numerous.—*C. E. Bourgault, D.L.S., 1907.*

28. (*North outline*).—This township is similar to those in ranges 2 and 3, consisting of low ridges, covered with poplar, spruce and tamarack, alternating with tamarack swamps, muskegs and hay marshes. The proportion of dry land is somewhat greater, however, and the timber somewhat larger than in range 3, spruce and poplar twelve inches in diameter occurring. A small lake occurs in section 32. The soil is chiefly black loam on clay subsoil but gravel occurs in places.—*Wm. Christie, D.L.S., 1907.*

*Range 5.*

14. (*West part*).—The fractional township is all flooded with water and covered with reeds. However, in dry seasons hay can be cut in sections 6, 7, 16 and 17. The northwest part is covered with reeds and open spaces of water. Ducks, geese and muskrats are numerous.—*C. E. Bourgault, D.L.S., 1907.*

15. (*Fractional*).—This fractional township can be best reached by a good graded wagon road from Poplar Point, a station on the Canadian Pacific railway. The land is mostly stony and the soil is not of much depth, with generally a gravel subsoil. The removal of the stones will be expensive; the township at present is better suited for cattle raising than for any other purpose. However, the settlers who have cleared a piece of land have always a good crop of vegetables. As the hay is plentiful and of superior quality, the attention of the settlers is devoted to cattle and horse raising. There is no timber in this township; the only place where the farmers obtain their wood is at St. Laurent, situated twenty miles east. The water when found was fairly good. The settlers, however, now depend on wells or lake Manitoba during the winter for their supply. As there are no streams there can be no water powers. No stone quarries, nor minerals of value were noticed. Game, consisting of ducks and geese, is plentiful.—*C. E. Bourgault, D.L.S., 1907.*

21. Access to this township is very easy by wagon roads from Oak Point. In wet seasons these roads are nearly impassable, as no improvements have been made



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## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 5—Continued.*

on them. The soil is of good quality, but is generally covered with marsh or timber, so that it is not very suitable for grain growing. Cattle raising is followed exclusively by the settlers, and for this the township is well adapted, though grain could be grown in some sections. The woods are poplar of fair size and distributed over each section. Swan creek enters the township in section 6, running southeasterly. The climate is similar to that of central Manitoba. Good water is usually found in the swamps, and is generally easily obtained by digging wells. No stone quarries, coal or minerals were observed. Game of all kinds is scarce.—*C. E. Bourgault, D.L.S., 1907.*

22. The general aspect of this township is swampy and at the time of survey (September) nearly all covered with water. In wet seasons settlers cannot depend on the swamps to obtain a supply of hay to feed their cattle during the winter. There are some high ridges where the soil is composed of a few inches of black loam with sand and gravel subsoil, but they are covered with poplar and windfall. Moose and deer are quite numerous.—*C. E. Bourgault, D.L.S., 1907.*

28. (*North outline*).—This township is gently undulating, consisting of low ridges, timbered with poplar, spruce, tamarack and jackpine, separated by tamarack swamps, muskegs and hay marshes. The greater part of the timber has been killed by fires. The soil is chiefly a shallow layer of black loam on sand or gravel. I had to open the line twice across this range to connect with the northeast corner of township 28, range 6.—*Wm. Christie, D.L.S., 1907.*

*Range 6.*

14. Access to this township is easy by roads from High Bluff, a station on the Canadian Pacific railway. The north part is watered by lake Manitoba, while the south part is covered with long reeds and open spaces of water, so the land may be classified as swamp land, unfit for agricultural purpose. I must mention that hay is not plentiful, but in dry seasons sections 3, 2 and parts of sections 10, 11, 12 and 1, may be classified as hay land. There is only one farmer in section 6, where there is some cultivated land. Sometimes in the spring, the water of lake Manitoba rushes over the sandy beach and spreads over this township and on the north part of township 13, range 6. It is for that reason that the timber, like oak and cottonwood which are growing on this beach, should not be cut. I remark that where the timber has been cut, the sand on the beach is washed out by the waves of lake Manitoba during a great northwest wind storm, and water and ice come in and spread over township 13, where there is first class farming land, and this makes very great damage. This sandy ridge is about four chains wide, from four to eight feet high and contains the best and finest sand for masonry and cement brick. No fuel occurs in this township. Game is plentiful, consisting of ducks and geese.—*C. E. Bourgault, D.L.S., 1907.*

22. From Oak Point, a station on the Canadian Northern railway, there is a good wagon road to Deerhorne. From there I cut a trail to section 28, township 22, range 6. Access to this township is also easy by another road cut by settlers, last summer in sections 3, 4, 9, 16, 21, and 28. The surface is generally timbered with poplar of eight to eighteen inches in diameter and scattered big spruce and willow, interspersed with hay marshes and lakes. Hay can be procured in many of the marshes, but in a wet season like last summer few if any of the marshes can be entered. Settlers had a very hard time to cut hay for their own cattle, some of them were



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## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 6—Continued.*

obliged to cut hay in water, and haul it with a sleigh and a pair of oxen on a high place to dry. Some of them were forced to sell their cows or send them away for winter. July, August and September were very wet. The soil is of good quality, black loam, clay and sand subsoil, but the expenses incurred in clearing the land from green and dry wood will be too expensive now for farming. For this reason this township is better suited for stock raising than for anything else. The water is fresh and during all summer about half of the surface is flooded to the depth of from four inches to two feet. The surface is level. There are no streams and no water-powers. A few jumping deer were noticed. No minerals of any value were found.—*C. E. Bourgault, D.L.S., 1907.*

*Range 7.*

22. Coming into the township by the colonization road to Scotch Bay from Oak Point on the Canadian Northern railway I was able to get into the south part by settlers' trails and those of the Indians, none of which were in good condition. To get farther north I was forced to make a trail for myself. The whole country is gently rolling, wooded with poplar, chiefly, on the ridges and having hay meadows or sloughs in the depressions. There was some spruce also, but no marketable timber. To the north the country had been more burned in places and was slightly more rolling though by no means hilly. Game was abundant. No minerals of economic value were seen, nor is there any water-power in the township. Though many of the quarter sections are taken up only a few were occupied at the time of survey (August) as nearly everyone was waiting till the township would be subdivided. This township has long formed a hunting ground for the Indians of the adjacent reserve and many of their old camps were seen. An old telegraph line runs diagonally across the township from northwest to southeast. In some places it can scarcely be seen. I think the township will make an excellent mixed farming country.—*Geo. A. Grover, D.L.S., 1906.*

*Range 8.*

22. I think most of the marshes in this township will in time dry up, if not altogether, at least to a considerable extent. At present they are difficult to survey owing to the lack of well defined shores. The township has good soil. The surface is rolling, covered in the northern part by poplar bush with considerable spruce in some places. Near the Indian reserve the country is much broken by immense hay meadows and marshes, on the higher places only scrub is growing, brulé and deadfall showing the work of fires. Settlers seem to be coming into this country rapidly. *Geo. A. Grover, D.L.S., 1906.*

*Range 10.*

21. Along lake Manitoba this township is open and marshy and more remote from the lake it is densely timbered with poplar and willow. The chief industries are stock raising and fishing. Much hay can be procured in the sloughs and marshes. Moose and deer are abundant. Only a small percentage of the land is yet broken, barely enough to produce vegetables.—*Geo. McMillan, D.L.S., 1907.*

25. (*Fractional.*)—This township consists of a small strip of land in the west part of sections 6, 19, 30 and 31 and Richard point which occupies part of sections 1, 2 and 12. There is a small area of good land in sections 30 and 31 and also on Richard point. There is one settler at each of these places. Reed island is only a group of low sand bars covered along the edges with long reeds and small willows.



## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 10—Continued.*

As there was no definite shore I did not traverse them. There are no water-powers, no quarries and no minerals of any description.—*Paul T. C. Dumais, D.L.S., 1906.*

**26. (Fractional.)**—This township is only a strip of land composed of the west parts of sections 6, 7, 18 and 19. There are some good patches of land in sections 6 and 7, but the balance is all swampy and is covered with long reeds and small willows. There is a bluff of poplar on section 7 averaging twelve inches in diameter, some patches of prairie on section 6, and a few hay sloughs. There are no water-powers, no quarries and no minerals of any description.—*Paul T. C. Dumais, D.L.S., 1906.*

**28 & 29.** These townships were reached from Oak Point by the winter trail to Fairford postoffice. The soil is a black loam from one to five inches deep on a clay subsoil. The land is covered with small poplar, willow and a little spruce and oak all under ten inches in diameter, but no timber suitable for lumbering purposes is found. A large quantity of hay grows in the marshes. Water is abundant in lake Manitoba and in the marshes but no water-powers occur. The climate is moderate. Fire-killed trees furnish a good supply of fuel. Limestone is found close to the surface and there is said to be a large deposit of good quality adjoining the shore of lake Manitoba. No minerals were found. Moose and elk were the only game seen.—*J. L. R. Parsons, D.L.S., 1907.*

**32.** Across this township the line passes mostly through dry country covered with woods of a varied character, consisting of small poplar, alternating with patches of spruce, tamarack or jackpine. In the west half of the range much of the woods have been destroyed by fire, and a growth of small scrub has sprung up. The land is about level, and the soil in the eastern portion of the range is black loam from four to twelve inches in depth on clay subsoil. On the north boundaries of sections 32 and 31 it is mostly gravel.—*Wm. Christie, D.L.S., 1907.*

**25.** From Makinak station on the Canadian Northern railway, the shortest route to reach this township is by the graded road going east as far as Ste. Amélie, a distance of fifteen miles, and thence by the old trail to Ebb-and-Flow Lake Indian reserve. From the reserve there is a cart trail going north on the west side of Ebb-and-Flow lake as far as Crane bay on lake Manitoba in section 21 of this township, and at a distance of about twenty-eight miles from the east end of the graded road mentioned above. This township could also be reached in summer by boats that generally run from Oak Point which is on lake Manitoba, and which is the terminus of the Canadian Northern railway branch from Winnipeg. This township is broken on the northwest by Crane bay of lake Manitoba, which partly covers sections 21, 22, 27, 28, 31, 32, 33 and 34. On the east side, sections 12, 13 and 24 are partly covered by lake Manitoba, and on the southwest, Ebb-and-Flow lake with an area of over two square miles extends over parts of sections 5, 6, 7, 8 and 18. The soil is mostly sandy loam with a subsoil of clay, but in some places sand and gravel is found. There are ten Icelandic settlers squatted along Crane bay and lake Manitoba. They cultivate no grain but grow potatoes and all sorts of vegetables. They have good herds of cattle, the country being well adapted for stock raising. The land is good for farming, but where the settlers are located it is so flat that it is liable to be flooded in the rainy seasons. Along the lake and bays are large muskegs covered by reeds eight to ten feet long. There are numerous hay sloughs which grow quantities of good hay. The south part of this township is heavily timbered in places with poplar up to fifteen inches in diameter. There is also some scattered spruce and small oak which may be used for building and fencing. A large part of this township has been fire swept and the fire-killed poplar will furnish any quantity of fuel. The country is very level all over



SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 10—Continued.*

this township. There are no water-powers, no quarries and no minerals of any description in this township. Moose, elk and jumping deer are numerous. There are also great numbers of rabbits and a few partridges. Pike and whitefish are caught in great numbers in lake Manitoba.—*Paul T. C. Dumais, 1906.*

26. This fractional township consists of sections 1, 2, 12 and part of sections 3, 4, 6, 11, 13 and 14. It is broken by lake Manitoba and by five other lakes, sections 1 and 12 being the only ones which are unbroken. There are some good patches of land in sections 1, 2, 3, 4 and 12, but the remainder is all swamp and muskeg covered with long reeds and small willows. The soil is mostly sand, clay and gravel covered with four to six inches of black loam. Parts of sections 1, 2 and 12 are well timbered with poplar up to twelve inches in diameter. There is also some small oak and birch and a great deal of willow scrub. Cherry island on the north boundary of this township, is only a swamp sand bar covered with long reeds and willows along the shore. There are no water powers, no quarries and no minerals of any description.—*Paul T. C. Dumais, D.L.S., 1906.*

28. In this township the line crosses Peonan point, a long narrow peninsula extending from the north end of lake Manitoba to about nine miles south of this line. It has a width on the line of about three miles, the east shore being reached in section 35, and the west shore in section 32. Along each shore is a strip, about half a mile in width, of wet, marshy land, part of which is hay land, but the greater part of which is covered with tall reeds and rushes. The interior of the point is mostly wooded with poplar; but many marshes and muskegs occur. The soil is chiefly black loam on clay subsoil. The south end of this point is very low and marshy.—*Wm. Christie, D.L.S., 1907.*

32. The eastern half of this township is similar to range 10, being covered with poplar and spruce, much of which has been destroyed by fire, and having numerous sloughs and marshes. A small creek, known as Powderhorn creek, crosses the line in section 34. In the west half of the range the line crosses extensive muskegs with bluffs of tamarack and willow. A very reedy lake, known as Basket lake, lies about half a mile to the south of the line, partly in range 11 and partly in range 12. This lake is about three miles in length from east to west and from two to three miles in width. Basket creek flows from this lake to lake Manitoba. This creek has a fairly rapid current, which would appear to indicate that Basket lake is at a considerably higher level than lake Manitoba, and points to the possibility of much of the swamp land being drained. The soil is black loam on clay subsoil.—*Wm. Christie, D.L.S., 1907.*

*Range 12.*

26. The centre of this township is situated at a distance of twenty-seven miles east of East Bay postoffice, near lake Dauphin, and is about forty-nine miles from Makinak station on the Canadian Northern railway. From this last place to East Bay there is a well graded road. To go farther east there is a wood trail for four miles, and from there I opened a winter trail through townships 26, ranges 15, 14, 13 and 12 as far as lake Manitoba. The soil in this township consists of a black loam four to ten inches in depth, with a subsoil composed chiefly of clay, with some gravel and sand in places, especially on the west half. A large part of the east half of the township is covered by lake Manitoba. Large muskegs border the lake extending in some places for over half a mile from the shore. Long reeds and small willows grow in these muskegs and in most of the large sloughs which are numerous



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## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 12—Continued.*

all over this township. There are also many hay sloughs where large quantities of good hay can be made in dry seasons, but this country being very flat there would be some difficulty in making hay in a wet season. There is no valuable timber in this township. The best of what there is, is good only for small buildings, fencing and fuel. There are no water-powers, quarries or minerals, but it is a good country for game. Moose, elk and jumping deer were numerous at the time of the survey. Rabbits are in abundance and there are plenty of pike and whitefish in lake Manitoba.—*Paul T. C. Dumais, D.L.S., 1906.*

28. The greater part of the township falls in lake Manitoba, the west shore of the lake being reached in section 32. In section 31 the line passes through country similar to that in range 13. Along the shore of the lake is a strip of low marshy land of varying width. The soil is black loam on clay subsoil.—*Wm. Christie, D.L.S., 1907.*

32. In this township the line crosses a series of large muskegs and swamps with low ridges covered with small poplar and willow. The soil is black loam on clay subsoil.—*Wm. Christie, D.L.S., 1907.*

*Range 13.*

26. From Makinak station on the Canadian Northern railway, there is a good road to East Bay and lake Dauphin, a distance of twenty-two miles. From there, for about four miles due east, is a bush trail but for the remaining ten miles to the centre of this township, we had to go through bush, slough and muskeg. The surface is covered with poplar, willow and a few scattered spruce, the poplar measuring up to twelve inches in diameter. The soil is similar to that in township 26, range 14, a mixture of clay, sand and gravel covered by four to six inches of black loam. The country is very level, with many sloughs and muskegs. Green and dry poplar, for fuel and fencing purposes, is plentiful. Tamarack lake (so called by Indians) is over three miles long and extends north and south, partly covering sections 3, 10, 15 and 22. There is no water-power, no quarries and no minerals. Moose, elk and jumping deer are numerous, and the country seems to be overrun with rabbits.—*Paul T. C. Dumais, D.L.S., 1906.*

28. In this township the line crosses much marsh and muskeg but there is a larger proportion of bush than in range 14 and the timber is also larger, poplar up to eight inches in diameter being found. Crane river crosses the line in section 31 flowing north into Crane bay. On both sides of the river is a strip of marshy land and close to the river banks are tall reeds. A lake half a mile in width and surrounded by a reedy marsh is also crossed in section 31. The soil in this range is chiefly black loam on a subsoil of clay.—*Wm. Christie, D.L.S., 1907.*

32. In this township the line passes through low country consisting of low ridges covered with poplar and willow, separating large muskegs and hay sloughs. In sections 36 and 35 the line crosses a bay of lake Manitoba. Boggy creek flows into lake Manitoba from the north in section 35. In section 34 and 33 the line crosses Proulx lake. This lake is about four miles in length from north to south and the greater part of it lies in township 33. The soil in this range is chiefly black loam on clay subsoil.—*Wm. Christie, D.L.S., 1907.*

23. (*Fractional.*)—From Makinak, on the Canadian Northern railway, there is a good road to this township. The soil, which is similar to that in the neighbouring townships, is fairly fit for cultivation, being clay, sand and gravel, covered with



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 13—Continued.*

three to six inches of loam. The timber is chiefly fire-killed and standing poplar, with some green bluffs here and there and a second growth of poplar and willows. There are a few hay sloughs throughout the township. There are no water-powers, no quarries and no minerals of any description. Moose, elk and jumping deer are numerous. There are also great numbers of rabbits and a few partridges. Pike and whitefish are very plentiful in lake Manitoba.—*Paul T. C. Dumais, D.L.S., 1906.*

26. From Makinak station on the Canadian Northern railway, there is a good road to East Bay postoffice situated on section 1, township 26, range 16. Thence going east there is a bush trail for about three miles, but from there I had to cut a road as far as range 13. The soil in this township is a mixture of clay, sand and gravel, with four to six inches of black loam on top. There is no prairie, but there are many hay sloughs and muskegs and much swampy land. The remainder of the township is covered with poplar running up to ten inches in diameter, and willow scrub. There is also some small scattered spruce in the north sections. The country is very level, except in the north, where it is gently undulating. Good hay can be made in the numerous sloughs, but it can be cut only in dry seasons. The surface water is generally a little alkaline, but we found good fresh water by digging four or five feet. There were no indications of summer frosts. Green and dry poplar is plentiful all over the township and could be used for fuel, for small buildings and for fencing. There are no water-powers, no quarries and no minerals in this township. Moose, elk and jumping deer were frequently seen during the survey. Rabbits are very numerous.—*Paul T. C. Dumais, D.L.S., 1906.*

28. In this township the line crosses low swampy land partly covered with poplar and willow scrub but chiefly open swamps and patches of prairie. At the time the survey was made (June) owing to the late spring and unusual depth of snow during the previous winter, the land was much wetter than it would be in an ordinary season and much of the land which at that time was under water would on an ordinary year be excellent hay or grazing land. The soil is principally black loam to a depth of from eight to twelve inches on a clay subsoil. In a few places however the subsoil is gravel. This should be an excellent place for stock raising as there is sufficient pasture land and also a supply of hay can be obtained.—*Wm. Christie, D.L.S., 1907.*

32. In this township the line crosses a series of low ridges covered with poplar and willow, separated by large muskegs, swamps and hay marshes. Some brulé is met with on the north boundary of section 33. On the north boundary of section 31 the east shore of lake Manitoba is reached. The north end of the lake extends about a mile north of the line. The soil is black loam on clay subsoil.—*Wm. Christie, D.L.S., 1907.*

*Range 15.*

10. (*North outline.*)—Spruce Woods timber reserve occupies a part of this township. A great amount of marketable timber has been cut and the township has been overrun by fire, but there is still much timber remaining which will furnish fuel for many years. Transportation of this fuel will be comparatively easy as the Canadian Pacific and Canadian Northern railways pass through this township. The country along the north boundary is wholly unfit for farming. The soil is a poor quality of light sand, where there was not sufficient grass growing to feed my horses. Some fair sized tamarack, mostly dry, was noticed, while scattered spruce and poor poplar extend through the east part. Water is scarce and except what is found in the muskegs,



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## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 15—Continued.*

must be obtained by digging wells. A few jumping deer were the only game seen.—*C. E. Bourgault, D.L.S., 1907.*

32. In this township the western shore of lake Manitoba is crossed on the north boundary of section 35, and Waterhen river is crossed on the north boundaries of sections 33 and 32. Between lake Manitoba and Waterhen river are bluffs of small poplar by patches of prairie and hay marshes. Two small creeks cross the line in section 34. West of Waterhen river are low ridges, covered with brulé, small poplar and willow, separated by tamarack swamps. The soil is black loam on clay subsoil.—*Wm. Christie, D.L.S., 1907.*

*Range 16.*

10. (*North outline.*)—Spruce Woods timber reserve occupies a part of this township. A great amount of marketable timber has been cut and the township has been overrun by fire, but there is still much timber remaining which will furnish fuel for many years. Transportation of this fuel will be comparatively easy as the Canadian Pacific and the Canadian Northern railways pass through this township. The country along the north boundary is wholly unfit for farming. The west part of the township is covered with muskeg, thick willow and scrub. The east part is also covered by spruce on sand hills separated by small marshes where there is no hay. The soil is a poor quality of light sand, where there was not sufficient grass growing to feed my horses. Some fair sized tamarack mostly dry was noticed, while scattered spruce and poor poplar extend through the east part. Water is scarce and except what we found in the muskegs, must be obtained by digging wells. A few jumping deer were the only game seen.—*C. E. Bourgault, D.L.S., 1907.*

32. In this township the greater part of the line falls in a bay of lake Winnipegosis, the eastern shore of which crosses in section 34 and the western shore in section 31. The shores of lake Winnipegosis are here very low and marshy, tall reeds growing in the water along the shore. On the north boundary of sections 36 and part of 35 the line passes through brulé with small poplar and jackpine, and tamarack swamps. The soil is black loam on clay subsoil. Some settlers have already located along the shore of the lake in townships 31 and 32. They engage in ranching and fishing.—*Wm. Christie, D.L.S., 1907.*

51. The trail from Battleford to Birch lake passes through section 25 and 35 of this township and forms the best route for reaching it, as it is generally in good condition. There are some hills to be crossed, but they present no special difficulty. One creek, which has to be crossed, might cause trouble in a wet season. The soil of this township consists of a thin layer of black mould with a sub-soil generally of clay loam or sandy clay. In many places stones occur but not so thickly as to interfere with agricultural operations. About half of the township has first class soil, the remainder being second class. Practically the whole is covered with either light or heavy scrub poplar and willow. A great many small open spaces occur especially in the northwest portion of the township, and also near the shores of MacLeod lake. About eighteen per cent of the surface is water, ten per cent open, and the remainder scrub poplar and willow interspersed with scattered poplar and balm of Gilead, averaging eight inches in diameter. Sections 2, 3, 4, 5 and 6 are rolling while the remainder is gently rolling country. Poplar and balm of Gilead averaging about eight inches are scattered all over the township. A small amount of spruce is found near the small lakes in sections 5 and 6. These trees average about eight or nine



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 16—Continued.*

inches in diameter, the largest being about fourteen inches. Altogether about one hundred thousand feet of lumber could be cut. Grass grows luxuriantly in all the open places throughout the township. Scattered over the township are a few very small hay meadows. The upland grass should also make good hay. This township is well supplied with water. Birch lake occupies about half of sections 25. and 36, and along the south outline of the township is a string of lakes connected by small creeks. Several sloughs are to be found throughout the township all of which contain good drinking water. MacLeod lake, a rather shallow lake of 2,000 acres area, occupies parts of sections 10, 11, 14, 15, 16, 22 and 23. The water is slightly brackish, and the supply is sufficient and permanent. No land is liable to be flooded to any serious extent. The small streams along the south outline average about eight feet wide and six inches deep with an average current of three miles an hour. No water-power could be generated. The climate was cool, the days being moderately warm. Considerable rain was experienced, but no summer frosts occurred. Fuel in the shape of poplar can readily be procured throughout the township. No coal or lignite veins were seen. No stone in place was observed, although loose stones for building purposes are abundant. No minerals of economic value were found. Game seemed to be rather scarce as the Indians have for a long time made this district their hunting ground. An occasional prairie chicken or partridge was seen, while duck of various kinds were very plentiful. Trails of red deer and moose were noticed. Rabbits and other small game did not appear to exist. Elk had evidently lived here formerly but no recent traces of them were noticed. Birch lake and the series of small lakes mentioned contain an enormous quantity of fish, those noticed being jack-fish, whitefish, sucker and pickerel.—*H. S. Holcroft, D.L.S., 1907.*

*Range 17.*

32. In this township the line passes over a series of low flat ridges, covered with brulé, a growth of small poplar and a few jackpine, separated by muskegs and hay marshes. The eastern shore of lake Winnipegosis proper is reached in section 33. A small lake is also crossed in section 36. The soil is black loam on clay subsoil.—*Wm. Christie, D.L.S., 1907.*

*Range 18.*

32. In this township the line crosses Red Deer point, a long narrow peninsula extending about eighteen miles north on the line into lake Winnipegosis. On this point the line passes through poplar and spruce up to fourteen inches in diameter. Most of the spruce of any value however has already been removed. There are also many hay marshes, and a small lake is crossed in section 32. The line crosses Fuller's bay on the north boundary of sections 33 and 34 and reaches the western shore of lake Winnipegosis proper on the north boundary of section 35. The soil is black loam on clay subsoil.—*Wm. Christie, D.L.S., 1907.*

*Range 19.*

36. The greater part of the line in this township falls in Sagenace bay, a portion of lake Winnipegosis separated from the main lake by Red Deer point. Along the shore of the bay is a strip of hay marsh. Back of this is a narrow strip of heavy poplar bush and back of this again is small poplar and willow with hay meadows and sloughs.—*Wm. Christie, D.L.S., 1907.*



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## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 25.*

41. The soil in the southwest corner is good and suitable for farming but the greater part of the rest is muskeg or swamp and very wet and is of very little use. The surface is level and covered with thick woods. The only timber of any value is at the southwest corner. It is chiefly poplar and spruce from eight to sixteen inches in diameter. Spruce, tamarack and willow are found in the muskegs. Some balsam and birch were also seen. Hay is very scarce. The water is fresh and very plentiful and the supply is permanent. Only small streams are found. The land is flooded to a great extent now (May), a foot or more deep. There are no water-powers. The climate was very disagreeable. Cold cloudy weather with alternate snow, sleet and rain storms occurred in the latter half of May with as much as five feet of snow on the ground in places in the hills, while two feet was common on the level in the big timber. Frosts were experienced. Wood is the only fuel but it is plentiful almost everywhere. No coal, stone quarries or minerals were found. Moose was the only game seen, but they are plentiful.—*W. G. McFarlane, D.L.S., 1907.*

*Range 26.*

41. The soil is good for farming in the southerly part but is more sandy and very stony towards the north. There is also considerable muskeg towards the north-east. The surface is all heavily wooded, poplar and spruce to the south and some small poplar, birch and jackpine towards the north, with spruce and tamarack in muskeg on the east. The only timber of any value is in the southerly part or on the hills to the west. It is chiefly poplar and spruce from eighteen to twenty-four inches in diameter with some balsam and birch from six to twelve inches. There is a fair amount of it but it will be hard to get out as no waterways are available and the surface is very hilly. Some birch, balsam and alder were also found. Hay is very scarce. The water supply is very abundant and fresh, no alkali being found. The streams are small but there are quite a number of them. The land is not liable to be flooded except in the muskeg at the easterly side. There are no water-powers. The climate was very disagreeable. Cold cloudy weather with alternate snow, sleet and rain storms occurred in the latter half of May with as much as five feet of snow on the ground in places in the hills, while two feet was common on the level in the big timber. Frosts were experienced. Wood is the only fuel but it is plentiful almost everywhere. No coal, stone quarries or minerals of any kind were found. The only game seen was moose. The westerly part of the township is up in the Porcupine Hills and is very high and rough.—*W. G. McFarlane, D.L.S., 1907.*

42. The route followed is a trail which crosses the railway north of Novra and runs north along the foot of the hills. It was in general good but very stony in places. The soil at the south and north sides of the township is a black loam and clay, is very good for farming and is well watered, but in the centre it is sandy on the ridges and there is considerable swamp and muskeg. The surface is rolling at the south and north sides, hilly at the west and flat at the centre of the east side. It is almost all thickly wooded. A little brulé is found just south of Bell river and also some at the north side of the township. The only timber of value is found on the hills to the west and across the centre of the township. It is chiefly poplar and spruce eight to twenty-four inches in diameter. Jackpine birch and poplar are found at the south and north sides and some tamarack at the east. Hay is very scarce. The water is fresh and abundant and the supply is permanent. Bell river at the south side of the township is a fine stream, especially in the spring when we had great difficulty in crossing it, as the snow was just melting in the hills to the west. It was about five feet deep and running about eight to ten miles an hour carrying down large



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 26—Continued.*

trees and roaring like distant thunder. The only part of the township liable to be flooded is the muskeg near the centre of the east side but quite a number of streams run out of it to the railway ditches. Water-power might be developed farther to the west on Bell river but there are no rapids or falls of any height in the part surveyed. The climate was very damp and cool. Considerable rain fell. Frosts were noticed. The only fuel is wood but it is plentiful almost everywhere. No coal, stone quarries or minerals were found. The only game seen was moose, jumping deer and bear.—*W. G. McFarlane, D.L.S., 1907.*

43. The trail runs along the foot of Porcupine hills, west of the Canadian Northern railway. It is good in general but very soft in a few places. The soil is good for farming at the south side, being a good loam and clay subsoil but gets sandy towards the north and is very sandy in some places along jackpine ridges. There is also some muskeg and swamp near Mafeking. The surface is rolling, timbered and scrubby, with some brulé at the south side. Timber has been large and plentiful to the west of Mafeking and north to Steeprock river but it is mostly cut over now. Some poplar six to eighteen inches and spruce six to thirty inches is still found, but the timber is mostly second growth poplar, jackpine one to twelve inches, birch, willow and alder. Some tamarack is found in the muskeg. Hay is very scarce. The water is fresh and very plentiful in streams and Steeprock river. This river is a fine stream about one and one-half chains wide four feet deep and has a current of four or five miles an hour. The land is not likely to be flooded. There are no water-powers. The weather was damp and cloudy with considerable rain. Ice was still to be found along some creeks in the middle of June. No hard frosts were noticed. The only fuel is wood, but there is plenty of it everywhere. No coal, stone quarries or minerals were found. Moose and bear were seen.—*W. G. McFarlane, D.L.S., 1907.*

44. The trail runs on at some distance west of the Canadian Northern railway until close to the south boundary, where it goes along the right-of-way through muskeg and is very bad until within about a mile of Rice creek, where it again skirts the hills and is drier and better. The soil at the south side of the township is light at the west, and muskeg and swamp near the railway but it is better towards the north and would make fair farm land. The surface is rather flat and thickly wooded. Some scattered timber is found but in no large blocks. It is spruce six to twenty inches, poplar two to twelve inches, birch, tamarack, willow and alder scrub with considerable jackpine to the southwest. Hay is scarce. Water is fresh and plentiful. Only small streams are found. The land is liable to be flooded several inches deep in places. There are no water-powers. The weather was damp and cloudy with some rain, but was fine and hot at times. No frosts were noticed. The only fuel is wood but it is plentiful everywhere. No coal, stone quarries or minerals were found. No game was seen.—*W. G. McFarlane, D.L.S., 1907.*

*Range 27.*

44. The trail followed runs along the foot of Porcupine hills and crosses the railway four times. It was fairly good but had a number of soft holes on it, and many creeks some of which had to be bridged. The soil is of all classes. On the north side of the railway and east of the centre it is mostly muskeg, but there is some good land along the railway in the west half. The southeast corner runs up on the hills and in some places the soil is sandy, while in others it is very heavy clay. The surface north of the railway and for about half a mile south of it, is level or



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## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 27—Continued.*

gently rolling. The southeast part is very hilly and rough, being cut up by deep ravines, down one of which Rice creek flows. It is mostly timbered east of the centre. The west part along the Canadian Northern railway has about a section of prairie, and the rest is chiefly scrubby land with considerable windfall to the northeast. The timber is six to ten-inch tamarack and spruce to the north of the railway chiefly, but some six to eight-inch poplar and balsam and a few birch are found. On the south side of the railway there is some jackpine to the east, some six to sixteen-inch spruce and poplar along the face of the hills up to Rice creek. A few eight to twelve-inch birch are also found. Hay is very scarce. The water is all fresh and very plentiful in creeks and muskegs. This creek is a fine stream about one chain wide and from one to two feet deep at low water. The current is about four or five miles an hour. The land to the northeast is liable to be flooded several inches deep in wet seasons. Rice creek is quite rapid up in the hills and small water-power might be developed by dams. The climate was fine and hot with some rain. No frosts were noticed. The only fuel is wood but it is very plentiful everywhere. No coal, stone quarries or minerals were found. Moose and bear were the only game seen.—*W. G. McFarlane, D.L.S., 1907.*

*Range 28.*

44. The trail follows along the railway for some distance and then leads off towards the hills somewhat. It is fairly good but has some soft places, and several creeks had to be bridged. The soil is a loam with clay subsoil and would be nearly all good farm land. The surface is level north of the railway and rises towards the south and is slightly rolling. It is all covered with heavy bush. There is considerable green timber in this township, six-inch to fourteen-inch jackpine at the south and east, and six-inch to twenty-five-inch spruce, four-inch to ten-inch birch, ten-inch to fourteen-inch black poplar, six-inch to ten-inch balsam, scattered nearly all over the north third of the township. Hay is very scarce. Water is fresh and plentiful in numerous streams and some muskegs. In some places the land is liable to be flooded on the north side of the railway. There are no water-powers. The weather was warm but often cloudy with several showers of rain and one very heavy rain. No frosts were noticed. The mosquitoes and sandflies were very bad. The only fuel is wood but it is quite plentiful almost anywhere. No coal, stone quarries or minerals were found. The only game seen was moose.—*W. G. McFarlane, D.L.S., 1907.*

*Range 29.*

44. The trail follows along near the railway, crossing four times and crossing numerous creeks which we had to bridge. It was very soft in many places and crosses some muskeg which had to be corduroyed. The soil is good throughout a good part of the north third of this township, but there is also considerable muskeg. Much of the good land was nearly covered with water, as this was a good season. The surface is level to the north of the railway, but rises some toward the south on the south side. It is all heavily wooded. There is considerable timber scattered through the township but the best of it has been cut off. Poplar six to fifteen inches and spruce from six to twenty-four inches are the chief kinds. A few twelve-inch birch and balsam are also found with six-inch tamarack in muskegs. Hay is more plentiful here than to the east. Several good hay sloughs are found along the north chord. It is all slough hay. The water is all fresh and very plentiful. One or two branches of Armit river run north to the main river. One is about a chain wide and from three



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 29—Continued.*

to four feet deep with a current of three or four miles an hour. A considerable part of the land here is swampy and might be flooded at times, as it was this year, several inches deep. There are no water-powers. The weather was warm but often cloudy with some rain. No frosts were noticed. The only fuel is wood, but it is plentiful everywhere. No coal, stone quarries or minerals were found. Moose was the only game seen.—*W. G. McFarlane, D.L.S., 1907.*

*Range 30.*

24. This township is easily reached by numerous trails and roads running out of Langenburg, a station on the northwestern branch of the Canadian Pacific railway. The roads are all in good condition for a new country. The soil throughout the township is a black loam with clay subsoil and is well adapted for wheat which seems to be the principal grain grown by the settlers. The surface is gently rolling with scattered willow scrub and poplar bluffs in the northerly part. The poplar is small and suitable only for fencing or fuel. There is no timber of any size in the township. There is hay sufficient for the requirements of the settlers, in the sloughs, which are scattered throughout the township. The water in the sloughs is good enough for cattle but not desirable for domestic purposes. There are, however, many good wells in which the water cannot be excelled and generally it is in unlimited quantities. There are no streams of any account. A stream about five links wide crosses the east boundary of section 24 and runs easterly. This stream appears to lose itself in sloughs in many places. There are no water-powers, stone quarries or minerals of any description in the township. The climate is good and generally free from summer frosts. Fuel is scarce and the settlers have to go some ten miles for wood. Game such as wild duck is plentiful. The township is well settled with Canadians from the eastern provinces, Germans and Galicians, all appearing to be in a prosperous condition. It is expected that a branch of the Canadian Pacific railway will be constructed through this township in 1908.—*W. J. Deans, D.L.S., 1907.*

44. The trail runs back to the south of the railway in range 29, about two miles along higher ground until it is about a mile past Westgate when it turns back towards the railway and crosses another branch of Armit river. It then follows along the railway through corduroyed muskeg for about three miles when it comes out into drier bluffy poplar country. It was very soft in places and several places were flooded. The ford at the river was good. The soil is chiefly muskeg in the easterly half but the west part is excellent and quite open in places and would make excellent farm land. It is a good loam and clay. The surface is level and almost flat. The easterly half is all covered with small timber and the west side with small timber and scrub, but the intervening part, about 600 acres of prairie, is bluffy. There is no timber of any value. It is chiefly small tamarack, spruce and poplar, with considerable alder and willow. Scattered six to twelve-inch spruce and poplar are found. Hay is plentiful on the prairie and is of excellent quality. There are several hay sloughs to the west of the prairie. The water is all fresh and very plentiful in streams and muskeg. Only small streams are found, but they are good ones. The land was partly flooded this summer on account of the wet season, but not deep. There are no water-powers. The climate was fine and warm in general but we had several showers and some cloudy weather, but no frosts. The only fuel is wood but it is plentiful everywhere. No stone quarries, coal or minerals were found. No game was seen.—*W. G. McFarlane, D.L.S., 1907.*



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## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 31.*

44. The route followed in reaching this township runs along near the railway crossing it four times and goes up south of Roscoe. Numerous creeks had to be bridged, and some muskegs corduroyed and soft places brushed as the country is so flat. The water lying on it makes the ground very soft. The soil is excellent with the exception of some muskeg west of Roscoe and a sandy ridge at Roscoe. Along a branch of Armit river, about a mile east of Roscoe, the land is excellent for farming. The surface is almost level. It is almost all covered with small timber. There is no timber of much value although scattered six to fourteen-inch spruce and poplar are found. Tamarack, balsam and birch are also found. Hay is scarce. The water is fresh and very plentiful. Armit river is a good stream about half a chain wide and four to five feet deep with a current of about three miles an hour. This drains a considerable part of the land, but there is some so level that it was almost flooded. There are no water-powers. The weather was usually bright and warm but we had some rain. No frosts were noticed. The only fuel is wood but it is plentiful. No coal, stone quarries or minerals were found and no game was seen.—*W. G. McFarlane, D.L.S., 1907.*

*Range 32.*

30. This township can be reached by a good trail running from Kamsack, a station on the Canadian Northern railway. The soil in the part of the township lying west of Whitesand river is a black loam with clay and sand subsoil and is well adapted for grain growing. The portion lying between Whitesand and Assiniboine rivers is largely alkaline flats covered with short grass. The surface of the township west of the Whitesand is rolling, while that between the two rivers is level. There is some willow and poplar scrub between the two rivers and some small poplar and willow along the Whitesand near its mouth. There is sufficient hay in the sloughs for the requirements of the settlers. Whitesand river, a stream averaging a chain in width and from two to six feet in depth enters the township on the west boundary of section 31, and running southeasterly joins the Assiniboine on section 4. The water of the Whitesand is fresh and of excellent quality. Assiniboine river forms the easterly boundary of this township. Water-power could easily be developed on Whitesand river by the construction of dams but the amount of energy which could be developed would be small and uncertain. Fuel is scarce throughout the township. The settlers obtain their supplies of wood from Duck mountain. There are no minerals or stone quarries in the township. There is a good market for farm produce at Kamsack, a divisional point on the Canadian Northern railway. The climate is good and generally free from severe summer frosts. Wild duck and prairie chicken are plentiful. Jackfish and goldeye are plentiful in Whitesand and Assiniboine rivers. Small wild fruits grow in great profusion in the sheltered spots along the river banks.—*W. J. Deans, D.L.S., 1907.*

44. This is a fractional township. It is nearly all muskeg and would be very hard to cross with teams. The poplar bush in the west side of range 31 was broken down flat and it would require weeks to cut a road through. The soil is nearly all muskeg and is of little use. The surface is flat and quite a lot of it covered with small spruce and tamarack but there is some open floating muskeg. There is no timber of any value. Hay is very scarce. Water is fresh and very plentiful, especially in the muskeg. Some small streams are found at the south. There are no water-powers. The weather was usually bright and warm but we had some rain. No frosts were noticed. The only fuel is wood, but it is plentiful. No coal, stone quarries, or minerals were found, and no game was seen.—*W. G. McFarlane, D.L.S., 1907.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

*Range 32—Continued.*

45. This is a fractional township. The soil is mostly muskeg. There are some stretches of land with poplar, but they are scattered and flat. The surface is flat and thickly wooded except in the muskeg, some of which is open and floating. There is no timber of any value. Hay is not plentiful, but there is some in sloughs towards the north. The water is fresh and very plentiful in muskegs and sloughs. The land was partly flooded several inches deep on account of the wet season and no streams to drain it off. There are no water-powers. The weather was usually bright and warm with some showers of rain, but no frosts. Wood is the only fuel but it is plentiful. No coal, stone quarries or minerals were found and no game was seen.—*W. G. McFarlane, D.L.S., 1907.*

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 1.*

37. Access to this township is, at present, by way of a wagon road from sections 6 and 5 southeast to Swan river and connecting there with existing roads. An alternative road crosses Swan river near the southwest corner of the township and connects with a road to Fort Pelly. The surface varies from nearly level land in the west and southwest, to rolling land in the northeast parts, except those parts of sections 19, 18, 7 and 6 on the easterly bank of Swan river and are therefore rough and hilly. The land is generally covered with scrub with scattered bluffs of poplar or spruce. Woods of poplar cover the eastern bank of Swan river in this township and poplar woods were found in sections 25, 26 and 27. In other sections the timbered land is of small area and of no importance except to settlers. Land producing hay is scarce though probably a limited quantity will be found on each section. A number of streams flow through this township, all of which contain excellent water, but in ordinary years these streams would probably become dry. No doubt good water can be obtained by digging wells, as the settlers in the adjoining township to the south have been successful in that way. There are no streams which could be used for water-power. Last season there were no summer frosts and the indications are that in an ordinary year good crops of grain might be grown. The only fuel available is wood of poplar and spruce and it is only in quantities sufficient for the use of settlers. No stone quarries or minerals of value were seen. Moose and deer were occasionally seen, but other game is scarce.—*Edgar Bray, D.L.S., 1907.*

38. Access to this township may be had by wagon trail passing through the easterly sections of township 38, range 2 and from there south and southeasterly to settlements south of Swan river, or by a branch road running along or near the second meridian. Either road is bad in wet weather, but the first is preferable although it is the longer. The land lying west of an imaginary line drawn through the middle of the southeast quarter of section 6 to the northeasterly corner of section 21 is a swamp of spruce and tamarack not suitable for farming. The timber varies in size from mere scrub to large trees up to eighteen inches in diameter though generally the timber is small. East of that imaginary line the surface varies from slightly rolling to rough lands and is suitable for agricultural purposes. It is covered with woods and scrub, in probably equal proportions. The timber is composed of poplar and birch with some spruce and jackpine. Land producing good hay is confined to a few small swamps scattered over the township. A few streams were found in which the water was fresh and good but generally the main supply is found in small ponds of rather inferior quality. There are no water-powers. The climate is practically



## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 1—Continued.*

the same as that of the country to the south, and no doubt successful farming may be carried on where the land is suitable. The only fuel available at present is wood and it is in considerable quantities and fairly distributed. No stone quarries or minerals of any value were noticed. We found traces of moose and deer but small game appears to have almost disappeared.—*Edgar Bray, D.L.S., 1907.*

45. The soil is usually very good, being a black loam with clay subsoil in general and would make good farm land. The surface is level and mostly covered with heavy timber. The timber is chiefly six to ten-inch poplar but there is also some six to twelve-inch spruce. It is scattered over nearly all this part of the township and is not of great value. Hay is very scarce only a small slough here and there. The water is fresh and very plentiful in streams and over a large part of the surface. The streams are all small with the exception of Smoking Tent creek which is forty feet wide and two feet deep with a current of about four miles an hour. The land is liable to be partly flooded but not to any great depth. There are no water-powers. The weather was usually cool and cloudy with considerable heavy rains. No frosts were noticed. The only fuel is wood but it is plentiful everywhere. No coal, stone quarries or minerals were found. The only game seen was bear.—*W. G. McFarlane, D.L.S., 1907.*

37. The route to and from this township is by a road from Fort Pelly by way of Swan river and also by a road cut by me through township 36, range 2 to section 5, township 37, range 2, and thence northerly. This road connects with existing roads in township 35, range 2. The first mentioned road is rough and hilly while the second is wet and sometimes impassable. The soil where it is dry is mostly a good clay loam and will be found suitable for grain growing or mixed farming. Swan river flows through the easterly part of this township. On each side of this river for a width of three-quarters of a mile the land is rough with frequent bare knolls. In other sections the country is nearly level and, except on the marshes, is covered with either woods of poplar or scrub in about equal proportions with the timber fairly distributed. Very large marshes are a prominent feature in the westerly two rows of sections. These marshes had the appearance of lakes last summer, but in a normal year they would shrink to much smaller size and would generally have much more margin than ten chains between high and low water. Hay in any quantity could not have been cut last year on account of the water, but in a year of ordinary rainfall large supplies of excellent hay may be procured in these marshes. Between these large marshes and the banks of the Swan river we found numerous small marshes producing hay of good quality in a dry season. Swan river and its branches will give an abundant and permanent supply of good fresh water. It is the only stream large enough to be considered as a source of power. In places dams might be built, but as the river is usually very low all winter, and also in dry summer weather, its value for that purpose is not of much account. Last summer was too rainy and cold for successful farming, but as grain growing was a failure in most places in that vicinity last year, this particular tract has not been shown to have an extreme climate. The indications are that growing grain here is as likely to be successful as it is in the partly settled country lying to the south. The first frost in the fall was September 14, which compares very favourably with localities where good crops were harvested. The only available fuel at present is wood. It is fairly plentiful and can probably be procured on every section in the township. No minerals of any value or stone for quarrying were noticed and probably none exist. As tracks of moose and deer were often noticed, it is probably that these animals are here in considerable numbers.



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 1—Continued.*

However, small game such as ducks and chickens were scarcely ever seen.—*Edgar Bray, D.L.S., 1907.*

45. The soil is very good in most places, being loam and clay subsoil, but stretches of muskeg run here and there through it. It would make fairly good farm land. The surface is level except where Red Deer river runs through it. Here the banks are quite high and steep. It is mostly covered with timber but there are some large hay sloughs at the east side and a little clearing west of the river beside the railway as well as a few open muskegs. The timber is chiefly six to twelve-inch poplar, but there is some scattered spruce. Small tamarack, balsam and birch are also found. The best timber is near the river. Hay is fairly plentiful in large hay sloughs east of Erwood and close to the railway. It is all slough hay. There is also a little in some of the muskegs farther west but it is too wet to cut much this year. The water is usually fresh and very plentiful in the river, streams, sloughs and muskeg, but there is bad water at Erwood. Red Deer river is about three chains wide and eight feet deep at Erwood with a current of about five or six miles an hour. As this is a very wet season a good deal of the land is practically flooded. There are no water-powers. The weather was rather cool and cloudy with considerable rain but no frosts. The only fuel is wood but it is plentiful. No coal, stone-quarries or minerals were found. The only game seen was bear.—*W. G. McFarlane, D.L.S., 1907.*

*Range 3.*

37. (*North and east outlines.*)—This township can be reached by a road cut out by me through township 36, range 2, connecting with an existing road leading to Fort Pelly. The soil is mostly a clay loam and is suitable for agricultural purposes. The surface is generally slightly rolling. Sections 36, 32 and 31 are covered with willow and poplar scrub while all the other sections surveyed are timbered with poplar from three to fourteen inches in diameter with occasional clumps of spruce or tamarack. Along and near both the east and north boundaries of this township numerous marshes were found where good hay in considerable quantities might be cut in a year of ordinary rainfall. As all the hay swamps and other depressions were flooded last year water was found almost anywhere. In addition there are a number of streams crossing the lines in which the water is good and the supply probably permanent in most cases. There are no water-powers. The climate is similar to that of partly settled districts a short distance south where good crops of grain have been grown. Poplar wood with a limited supply of spruce is the only available fuel. No stone for quarrying or minerals of any value were found. Small game such as ducks and chickens is scarce. However, numerous traces of moose, deer and bear were noticed.—*Edgar Bray, D.L.S., 1907.*

38. This township can be reached from a road from Fort Pelly to and along Swan river and thence by a road along or near the north boundary of township 37, range 2, to section 1 of this township, or by a road cut out by myself through townships 37, and 36, range 2, to a road now used leading to Fort Pelly. The first mentioned road is rather hilly along Swan river, while the last is level but last season it was sometimes almost impassable. The soil is generally a clay loam and should be suitable for raising grain or for mixed farming. Hay swamps were seen but they are not of much importance. The surface of the part surveyed is mostly slightly rolling and is covered with poplar woods and scrub in about equal proportions. The timber is from three to twelve inches diameter and appears to be fairly distributed. Streams of good fresh water from five to fourteen feet in width will insure an abundant and permanent supply for all pur-



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## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 3—Continued.*

poses. These streams, however, are too small for water-power. During last season the weather was too cold and rainy for successful farming, but in a normal year it would seem that the conditions would be suitable for agriculture. Poplar wood is the only fuel available and it can be found on any of the surveyed quarter sections. No stone fit for quarries was found nor were any minerals of value noticed. Game appears to be scarce though indications of deer, moose and bear were noticed.—*Edgar Bray, D.L.S., 1907.*

45. The country east of Etoimami in this range is mostly muskeg. There are some stretches of poplar where the soil is good but they are scattered. The soil is Etoimami is sandy but west of it there is good loam with clay subsoil, very good for farm land. The surface is flat at the east but is more rolling towards the west especially along Fir river. It is all covered with small timber, six to twelve inch poplar, four to ten-inch spruce and some tamarack to the east, and mostly six to fourteen-inch poplar to the west near the river. Hay is not plentiful except in open muskes or sloughs which were very wet. The water is fresh and very plentiful in streams, sloughs, muskegs and Fir river. The river is a fine stream, about thirty feet wide and three feet deep with a current of about four miles an hour. Much of the eastern part of this township is liable to be flooded several inches deep as it was this year. There are no water-powers. The weather was somewhat cloudy and cold with some rain. No frosts were noticed. The only fuel is wood and it is plentiful. No coal, stone quarries or minerals were found. The only game seen was bear. A few settlers are going into the west and south of Etoimami.—*W. G. McFarlane, D.L.S., 1907.*

*Range 4.*

38. The route to this township begins at Canora, on the Canadian Northern and runs in a northwesterly direction, passing by Astwood postoffice along a good trail to Fulton's mill in township 38, range 5 and thence easterly along a new trail not very passable in wet weather. In section 1 to 6, the soil is generally good, though the land is rather low. North of these sections, the township is almost entirely muskeg, and only suitable for a cranberry marsh. The surface is timbered and scrubby, covered with poplar, tamarack scattered spruce and willow scrub. This timber will be very useful for homesteaders, but is not in large enough quantities for lumbering. There are about one hundred and thirty-five acres of bush in section 19, consisting of poplar, two to twenty-four inches and spruce two to sixteen inches in diameter. There is approximately thirty-five acres of spruce and tamarack, two to twelve inches, in section 30, about eight acres each in sections 20 and 29 of scattered spruce, two to fifteen inches and poplar, two to ten inches, twenty acres in section 18, and fifteen acres in section 17 of poplar, two to fourteen inches and spruce four to twenty inches. In sections 14 and 15, there is six acres in each of scattered spruce and tamarack, six to ten inches in diameter. There are approximately eighty acres of poplar, spruce and tamarack, six to twelve inches in section 22. In section 27 there is about fifteen acres of poplar, spruce and tamarack, six to twelve inches. In section 23 fifty or sixty acres of poplar, tamarack and spruce, four to twelve inches occur, and in section 24, twelve acres of the same kind. In section 26 there is roughly about forty acres of tamarack, spruce and poplar, six to twelve inches and in section 8, thirty acres of scattered spruce, two to eight inches and poplar two to ten inches, and about twenty acres of the same in section 9, and ten acres in section 17. In section 10 there is about ten acres of scattered spruce two to eight inches and about five acres in section 15. In sections 1 to 6 there is a fair amount of hay spread over these sections, but north of this there is no hay. There is an abundance of fresh water, but in a dry year, the swamps would likely dry up.



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 4—Continued.*

As there are no large streams, the land is not liable to be flooded. There are no water-powers. There was frost during every month and ice in August. The rainfall was abundant in 1907. There is plenty of wood for fuel scattered all over the township. There are no stone quarries nor minerals. There were indications that moose were plentiful.—*C.A. Chilver, D.L.S., 1907.*

39 and 40. The only route for reaching these townships is from Wadena on the Canadian Northern railway along a trail running in a northeasterly direction to Kelvington postoffice, thence north to Little Nut lake, thence east over a poor trail, impassable in summer, crossing the north of townships 40, ranges 4, 5 and 6. There is no trail to townships 39, ranges 4, 5 and 6 and a summer trail is not possible and a winter trail very difficult to make on account of the great amount of fallen timber. The soil in these townships is all clay, but at present it is too swampy to be suitable for farming. A very good timber belt of spruce and white poplar lies across the north of this group of townships on the east of range 7. It extends from the north boundary half a mile south. On the east of range 6 it extends from the north boundary two miles south, and on the east of range 4 it extends from the north boundary two and one-half miles south. It is part of the Red Deer Lumbar Company's timber limit. The rest of the group is scrubby with small patches of scattered spruce. Hay sloughs are very numerous all through this group. There is an abundant supply of good fresh water. The Piwei flows across the north of range 6 and into the North Etoimami in range 5. It has an average width of fifty feet, a depth of four feet and carries a large volume of water. The North Etoimami flows north through range 5. Before the Piwei joins it has an average width of fifteen feet and a depth of two feet. Its current is slow till the Piwei joins it and then it is swift, having a number of swift rapids, an average width of sixty feet and a depth of four feet. A good deal of the land in these townships is always flooded and impassable in the summer. There are rapids on the North Etoimami, but these have not sufficient fall to be used to develop power. On account of the extensive swamps the climate is cool in the summer, but no summer frosts occurred during the survey. The only fuel available is wood and there is a great supply of dry wood all over this part of the country. There are no stone quarries or minerals of any kind in this group. Moose are very plentiful in this district.—*C. A. Chilver, D.L.S., 1907.*

45. The soil is good in most places, being a black loam with clay subsoil. There is some muskeg but not very much. The surface is level and thickly wooded with the exception of sections 5 and 8, which are scrubby and open. It is mostly timber to the east. Part of section 9 is also open. The chief timber is six to twelve-inch poplar and spruce with some eight-inch tamarack, but the timber is all scattered. Hay is fairly plentiful in sloughs scattered all over. The water is fresh and there is plenty of it in streams, sloughs and muskeg. The streams are all small. The land is not liable to be flooded much, but was a little in some places this summer. There are no water-powers. The weather was usually fine and bright, but we had occasional showers. We had a heavy frost which froze the potato tops. The only kind of fuel is wood, but it is very plentiful. No coal, stone quarries or minerals were found. The only game seen was bear.—*W. G. McFarlane, D.L.S., 1907.*

38. The route to this township begins at Canora on the Canadian Northern railway and follows a good trail running in a northwesterly direction by Astwood post office to Fulton's mill in section 16. The soil is clay with loam in some parts but on account of the extensive muskegs it is not suitable for farming with the exception of sections 1 to 6, which are very good. The south half of section 3 is prairie and a



## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 4—Continued.*

small part of sections 16 and 21 along the North Etoimami are also prairie. The north half of section 10, south half of section 16, the east quarter of section 21 and west quarter of section 22 are timbered with spruce and poplar six to fifteen inches in diameter. The east half of section 32 and the southwest quarter of section 33 are timbered with spruce and tamarack six to eighteen inches in diameter. The east half of section 28 and the west half of section 27 are timbered with poplar and spruce eight to twelve inches in diameter. The east half of section 24 is timbered with poplar two to twenty-four inches in diameter and the southeast quarter of section 36 is timbered with spruce two to twelve inches in diameter. In all of this township the spruce is too scattered to be valuable for lumbering but will be of great value to homesteaders. The remainder of the township is scrubby. The only hay in this township is a small quantity along the Etoimami valley. There is an abundant supply of good fresh water and the supply is permanent. The only stream of importance is the North Etoimami which begins in section 10 and flows north through the centre of the township. It has an average width of twenty links and depth of eighteen inches; it has a fair current. Back from the river valleys the lands are flooded the year round. There are no water-falls. The climate is a little cooler than the country to the south on account of extensive muskegs, and summer frosts are common. Wood is the only available fuel but the supply is very extensive. There are no stone quarries or minerals in this township. Moose, jumping deer and bear were the only game seen in this township.—*C. A. Chilver, D.L.S., 1907.*

**39 & 40.** The only route for reaching these townships is from Wadena, on the Canadian Northern railway, along a trail running in a northeasterly direction to Kelvington postoffice, thence north to Little Nut lake, thence east over a poor trail, impassable in summer, crossing the north of township 40, ranges 4, 5 and 6. There is no trail to township 39, ranges 4, 5 and 6, and a summer trail is not possible, and a winter trail very difficult to make on account of the great amount of fallen timber. The soil in these townships is all clay, but at present it is too swampy to be suitable for farming. A very good timber belt of spruce and white poplar lies across the north of this group of townships on the east of range 7. It extends from the north boundary half a mile south. On the east of range 6 it extends from the north boundary two miles south and on the east of range 4 it extends from the north boundary two and one-half miles south. It is part of the Red Deer Lumber company's timber limit. The rest of the group is scrubby with small patches of scattered spruce. Hay sloughs are very numerous all through this group. There is an abundant supply of good fresh water. The Piwei flows across the north of range 6 and into the North Etoimami in range 5. It has an average width of fifty feet, a depth of four feet and carries a large volume of water. The North Etoimami flows north through range 5. Before the Piwei joins it it has an average width of fifteen feet and a depth of two feet. Its current is slow till the Piwei joins and then it is swift, having a number of swift rapids, an average width of sixty feet and a depth of four feet. A good deal of the land in these townships is always flooded and impassable in the summer. There are rapids on the North Etoimami, but these have not sufficient fall to be used to develop power. On account of the extensive swamps the climate is cool in summer, but no summer frosts occurred during the survey. The only fuel available is wood and there is a great supply of dry wood all over this part of the country. There are no stone quarries or minerals of any kind in this group. Moose are very plentiful in this district.—*C. A. Chilver, D.L.S., 1907.*

**45.** The soil in the south and east parts of this township is of little use for farming, as it is chiefly muskeg. A sandy ridge also runs north in sections 5 and



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 4—Continued.*

8, but sections 6, 7, 9, 10 and 11 would make fairly good farm land. The soil in these is loam and clay. The surface is all covered with bush, but the greater part of it is scrubby. Some poplar and spruce are found at the west side of the range, but not in any quantity. Hay is plentiful only in the southwest corner of the township. It is all slough hay but of fairly good quality. The water is all fresh and very plentiful. Greenwood river runs through the west side of the range. It is about fifty feet wide, four feet deep and runs about four miles an hour. The south-east part of the township and a little at the southwest corner was flooded this summer on an average of eight inches deep. Small water-power might be developed on Greenwood river, but it would not amount to much. The weather was warm and usually bright. We had occasional showers of rain and a little frost. Wood is the only fuel, but it is plentiful everywhere. No stone quarries, coal or minerals were found. Bears were the only game seen.—*W. G. McFarlane, D.L.S., 1907.*

*Range 6.*

37. The route to this township begins at Canora on the Canadian Northern railway and runs in a northwesterly direction passing by Astwood postoffice along a good trail to Fulton's mill in township 38, range 5 to township 37, range 5 and then along a new trail west to township 37, range 6. The soil in sections 1 to 12 is very good and is suitable for farming lands but north of this the swamps are so numerous as to render the country of little use for farming and it is suitable only for a timber reserve. About six hundred acres of section 6 and the easterly half of section 1 are covered with poplar varying from two to ten inches in diameter. The remainder of the township is scrubby with a few small patches of fair timber. Hay is very abundant in this township, all of the creeks and streams having hay meadows along their banks growing firstclass blue-joint hay. The water supply is abundant and permanent and all fresh. One stream varying from twenty to fifty feet wide, and two feet deep, flows from the northwest to the southeast of the township. Its current is generally slow. Another stream on an average of eight feet wide and two feet deep flows across sections 7 and 5. It has a fair current. Most of the northern part of the township is flooded during a wet season and is almost impassible for wagons. There are no waterfalls in this township. On account of the swamps the climate is cooler than in the surrounding country and summer frosts were very frequent, ice being formed in August. The only fuel available is wood, white poplar fit for fuel being spread over the township. There are no stone quarries or minerals of any kind in this township. Moose and bear are the only game in this township.—*C. A. Chilver, D.L.S.—1907.*

38. The route to this township begins at Canora on the Canadian Northern railway and follows a good trail running in a north westerly direction to Astwood postoffice thence northerly along a good trail to township 37, range 5, thence westerly along a new trail to township 37, range 6 thence north along new trail to township 38, range 6. The new trail is very poor on account of the water. The soil is mostly clay with black loam but the swamps are so numerous as to render the soil useless for farming. The westerly half of section 18, section 19, section 20, section 29 and section 30, section 31 and westerly half of section 32 are timbered with spruce and poplar varying from six to eighteen inches in diameter. The spruce is not thick enough to be valuable for lumbering purposes but is very valuable for homesteaders. There is also a quantity of timber around Mann lake, spruce and poplar six to eighteen inches in diameter. The easterly half of section 36 is timbered with spruce six to eighteen inches (Fulton's limit.) The remainder of the township is scrubby



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## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 6—Continued.*

There is not much hay in this township as all of the low lands are muskegs, and hay sloughs are very scarce. There is an abundant supply of good fresh water. Though there are no creeks of any size small creeks are numerous. A large portion of the township is flooded the year round. There are no waterfalls. On account of the great extent of swamps the weather is cooler in the summer than in places of similar latitude, and summer frosts occurred during every month of the summer. The only available fuel is wood but this is very abundant all over the township. There are no stone quarries or minerals of any kind in this township. Moose and bear are plentiful.—*C. A. Chilver, D.L.S., 1907.*

39 & 40. The only route for reaching these townships is from Wadena on the Canadian Northern railway along a trail running in a northeasterly direction to Kelvington postoffice, thence north to Little Nut lake, thence east over a poor trail impassable in summer, crossing the north of townships 40, ranges 4, 5 and 6. There is no trail to townships 39, ranges 4, 5 and 6 and a summer trail is not possible and a winter trail very difficult to make on account of the great amount of fallen timber. The soil in these townships is all clay but at present it is too swampy to be suitable for farming. A very good timber belt of spruce and white poplar lies across the north of this group of townships on the east of range 7. It extends from the north boundary half a mile south. On the east of range 6 it extends from the north boundary two miles south, and on the east of range 4 it extends from the north boundary two and one-half miles south. It is part of the Red Deer Lumber company's timber limit. The rest of the group is scrubby with small patches of scattered spruce. Hay sloughs are very numerous all through this group. There is an abundant supply of good fresh water. The Piwei flows across the north of range 6 and into the North Etoimami in range 5. It has an average width of fifty feet, a depth of four feet and carries a large volume of water. The North Etoimami flows north through range 5. Before the Piwei joins it has an average width of fifteen feet and a depth of two feet. Its current is slow till the Piwei joins it and then it is swift, having a number of swift rapids an average width of sixty feet and a depth of four feet. A good deal of the land in these townships is always flooded and impassable in the summer. There are rapids on the North Etoimami but these have not sufficient fall to be used to develop power. On account of the extensive swamps the climate is cool in the summer but no summer frosts occurred during the survey. The only fuel available is wood and there is a great supply of dry wood all over this part of the country. There are no stone quarries or minerals of any kind in this group. Moose are very plentiful in this district.—*C. A. Chilver, D.L.S., 1907.*

45. The soil in this township is in general loam and clay much of it would make good farm land if cleared. Some parts of it however are flooded this season but not very badly. The surface is almost level and all wooded. The east half had some fine timber on it but it is pretty well cut over now. It is mostly spruce. There is still some good eight to twenty-inch spruce and poplar in the west part of the township, and scattered trees on the east part. Hay is rather scarce but there are a few scattered hay sloughs. The water is fresh and very plentiful. Little Greenwood river runs down the east side of the range. It is about thirty feet wide, three feet deep and runs about two and one-half miles an hour. The land is flooded this summer in places but not to any depth. There are no water-powers. The weather was fine and bright with a few showers of rain and a light frost or two. The only kind of fuel is wood but it is plentiful everywhere. No coal, stone quarries or minerals were found. Bear was the only game seen.—*W. G. McFarlane, D.L.S., 1907.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 7.*

**39 & 40.** The only route for reaching these townships is from Wadena on the Canadian Northern railway along a trail running in a northeasterly direction to Kelvington postoffice, thence north to Little Nut lake, thence east over a poor trail, impassable in summer—crossing the north of townships 40, ranges 4, 5 and 6. There is no trail to townships 39, ranges 4, 5 and 6, and a summer trail is not possible and a winter trail very difficult to make on account of the great amount of fallen timber. The soil in these townships is all clay but at present it is too swampy to be suitable for farming. A very good timber belt of spruce and white poplar lies across the north of this group of townships on the east of range 7. It extends from the north boundary half a mile south. On the east of range 6 it extends from the north boundary two miles south, and on the east of range 4 it extends from the north boundary two and one-half miles south. It is part of the Red Deer Lumber company's timber limit. The rest of the group is scrubby with small patches of scattered spruce. Hay sloughs are very numerous all through this group. There is an abundant supply of good fresh water. The Piwei flows across the north of range 6 and into the north Etoimami, in range 5. It has an average width of fifty feet, a depth of four feet and carries a large volume of water. The North Etoimami flows north through range 5. Before the Piwei joins it it has an average width of fifteen feet and a depth of two feet. Its current is slow till the Piwei joins and then it is swift, having a number of swift rapids, an average width of sixty feet and a depth of four feet. A good deal of the land in these townships is always flooded and impassible in the summer. There are rapids on the North Etoimami but these have not sufficient fall to be used to develop power. On account of the extensive swamps the climate is cool in summer but no summer frosts occurred during the survey. The only fuel available is wood and there is a great supply of dry wood all over this part of the country. There are no stone quarries or minerals of any kind in this group. Moose are very plentiful in this district.—*C. A. Chilver, D.L.S., 1907.*

**45.** The soil is loam and clay in general but there is also some muskeg scattered here and there. The eastern part of the range is rather flat and quite wet this season, but the west side is drained by Prairie river. The surface is rather flat to the east but gently rolling towards the west. It is all thickly wooded. There is still considerable timber in the west part but a good deal has been cut out near Prairie river. It is spruce and poplar from six to twenty-four inches in diameter. The best of it is already taken up in timber limits. Hay is rather scarce but numerous hay sloughs are found here and there through the range. The water is fresh and plentiful. The only large stream is Prairie river. It is about sixty feet wide, three feet deep and has a current of about four miles per hour. There are no water-powers. The weather was cool and damp and we had about two inches of snow on September 13, and several hard frosts. The only fuel is wood but it is plentiful everywhere. No coal, stone quarries or minerals were found and no game was seen.—*W. G. McFarlane, D.L.S., 1907.*

*Range 8.*

**45.** The soil in the eastern half of this township is loam and clay in general and would make good farm land. Quite a large stretch of muskeg runs up through the west half but at the west side there is some more good farm land. The surface is rather flat and all thickly wooded. It is gently rolling to the northeast. There is some fine timber at the northeast corner of the part surveyed. Spruce from eight to thirty-six inches is found. There are also some scattered bluffs of spruce and poplar in the east half and also some at the west side of the township. Hay is scarce, but a



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## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 8—Continued.*

few hay sloughs are found. They were mostly too wet to cut this summer. The water is fresh and very plentiful in the muskegs, sloughs and small streams. There are no large streams. The land is in general rather flat and some of it especially in the muskeg is liable to be flooded a foot deep. There are no water-powers. The weather was bright and warm with occasional frost and some rain. The only fuel is wood but it is plentiful everywhere. No stone quarries, minerals, coal or game were seen. *W. G. McFarlane, D.L.S., 1907.*

*Range 9.*

45. The route followed was by trail along the Canadian Northern railway east from Mistatim. The trail crosses the railway several times and would be very rough for wagons. The ground was frozen and had five or six inches of snow so that it was good sleighing. The soil is mostly loam and clay but there are stretches of muskeg running here and there through the whole township. Some of it would make good farm land. The surface is gently rolling and all thickly wooded. A considerable quantity of timber is found at the west side and the southeast corner. It is pretty well cut over at the southeast corner now and the best of it has been taken off the west side. A lot of ties have been taken out and piled along the railway. There are still some scattered spruce from eight to thirty inches. Hay is not very plentiful but some long hay meadows are found along a creek in sections 23, 14 and 11. It is chiefly slough grass. The water is all fresh and very plentiful in small streams, muskegs and lakes. The land is only liable to be flooded slightly in the muskegs but not to any depth. There are no water-powers. The climate was fine and frosty. There was about six inches of snow on the ground and the trees were covered with it. We had occasional snow flurries. The only fuel is wood but it is very plentiful everywhere. No coal, stone quarries or minerals were found and the only game seen was lynx. There are some railway tie camps and mills near Bannock but they are not large ones.—*W. G. McFarlane, D.L.S., 1907.*

*Range 10*

38. The route to this township begins at Wadena on the Canadian Northern railway and runs in a northeasterly direction along a well beaten trail to Kilvington postoffice and thence north and northeasterly on a fair trail to township 37, range 10, thence north along a new trail to this township. The soil, generally is first class but sloughs and swamps are numerous and extensive. The soil is suitable for raising wheat and oats. The surface is covered with scrubby poplar and willow with the exception of sections 6 and 7, which are well timbered with white poplar varying from four to twenty-four inches in diameter. On an average year there would be an abundance of marsh hay, scattered all over the township, also a good growth of upland grass and peavine where the scrub is not too dense. In this township, there is a large and permanent supply of good water. One stream fifteen links wide and two feet deep begins in a lake in section 2 and flows westward across the township. It has a strong current and good water. Very little of the land, except that around the larger lakes, is liable to be flooded and that to no great depth. There is no water-power in this township. Though not there in summer, I heard reports of summer frosts in this township. The rainfall was abundant during summer months. Wood is the only available fuel. White poplar is scattered all over the township. There are no stone quarries or minerals in this township. Game is rather scarce on account of the closeness of the Indian reserve. There are a few jumping deer, mink and fox.—*C. A. Chilver, D.L.S., 1907.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 10—Continued.*

40. There are no good trails into this township, but by following the old Nut lake trail from Wadena to where it crosses the Indian reserve boundary and from there taking an old Indian trail, leading to Greenwater lake, to the north side of section 21, township 40, range 11 and thence along a trail which we cut, entrance can be gained by fairly dry trail. There is another entrance possible by an old Indian pack trail running north from Little Nut lake, using the Etoimami trail as far as the lake. This trail is very poor in summer time. The soil is a strong heavy one of black loam with clay subsoil and would seem suitable for all kinds of agriculture. The country is rolling and covered with second growth poplar with here and there bunches of larger poplar and spruce, especially to the north end of the township. There is no timber suitable for limits but there is enough for settlers' buildings distributed over the township in small clumps. Nearly all the lakes and marshes have hay along their borders and in the central part of the township there are some good patches of upland hay. There is a plentiful supply of fresh water of good quality in the numerous sloughs and creeks but I would not consider the land liable to be flooded. No water-powers, active or latent, were seen. The survey was made in the fall of the year and the climate seemed like that of Manitoba. For fuel settlers would have to rely on wood which is plentiful all through the township. No minerals of economic importance, stone quarries or game were seen. There were no settlers in the township at the time of survey but doubtless there soon will be. Railways are distant, clearing is fairly heavy and the land hilly and heavy but none of these features is sufficiently emphasized to deter settlers. I would consider this and the adjoining townships as attractive as any I know of for homesteaders, but at present only stock raising could be gone in for at a profit owing to the distance from market. There are numerous small lakes that look as though duck would be plentiful in a good year but this year we saw none.—*Geo. A. Grover, D.L.S., 1907.*

45. The route followed was by trail along the Canadian Northern railway and part of the time on the track. The trail crosses the railway several times and is very rough. The ground was frozen a little on top but would not carry in the swamps or muskegs. However corduroy across the muskeg kept the wagons up. The soil to the north of the railway is in general loam and clay and would make good farm land. There are a few stretches of muskeg running through it. To the south of the railway the west part is almost all muskeg but there is some fair land towards the east. The surface is all heavily timbered. The timber is chiefly spruce eight to thirty inches over almost the whole township with the exception of the southwest corner. A great part of it has been cut out for ties and lumber at Mistatim, but there is a considerable quantity left. The best has all been cut south of the railway. It is flat to the south and gently rolling to the north. Hay is rather scarce but there are quite a number of small hay sloughs here and there. The water is all fresh and plentiful in small streams and lakes. The only part of the township liable to be flooded is the southwest corner in the muskeg and it is flooded now (November) a few inches deep. There are no water-powers. The weather was fine, generally bright and frosty, but with several snow flurries and one heavy snow storm with high winds. We had from two to six inches of snow and zero temperature at times. The only fuel is wood but it is plentiful everywhere. No coal, stone quarries or minerals were found and no game was seen.—*W. G. McFarlane, D.L.S., 1907.*

*Range 11.*

38. The route to this township begins at Wadena on the Canadian Northern railway and runs in a northeasterly direction along a well beaten trail to Kelvington



## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 11—Continued.*

postoffice, and thence north along a fair trail to the township continuing through it.

The soil is a good black loam with clay subsoil and is very suitable for farming. Sections 21, 22, 23, 26, 27 and 28, are mixed prairie and scrub. Sections 1 and 12 are timbered with poplar varying from four to sixteen inches in diameter, and the remainder of the township is scrubby. The only timber is on sections 1 and 12, being white poplar four to sixteen inches, and is suitable only for building logs.

There are one thousand acres or more of firstclass hay land lying around Little Nut lake and a number of smaller meadows scattered about the township. There is a large permanent supply of good fresh water. The only large stream of water enters the township in section 18 and flows northwest to Little Nut lake. It is on an average twenty links wide and two feet deep. It has a strong current and carries a large volume of good water. There are no water-powers in this township. The climate is generally good but summer frosts were reported during last season. The rainfall was abundant. The only available fuel is wood, white poplar being spread over the township. The hay lands around Little Nut lake are generally flooded in the spring, but just enough to give a good hay crop. There are no stone quarries or minerals in this township. Jumping deer, fox, wolves, beaver, mink, ducks and partridge are found but are not plentiful.—*C. A. Chilver, D.L.S., 1907.*

39. The only trail into this township is an old Indian pack trail, which can be used for wagons by cutting in some places. The Nut Lake trail to the Hudson's Bay company's post and from there trails running north and south of Little Nut lake, (the former almost impassable in summer), lead into this township. The pack trail mentioned runs from the north side of Little Nut lake diagonally across the township and can be reached by following either of the trails mentioned to the lake and thence along the bank of the lake. The soil is a rich loam on clay subsoil and should be suitable for all kinds of agriculture. The surface of the township is rolling and covered with second growth poplar and scrub with here and there a spruce swamp. There is no timber of value, though there would be enough for the settlers first buildings. Hay, both upland and marsh, is plentiful all through the township. There is a plentiful supply of water, in fact the great number of lakes and marshes is one of the chief drawbacks to the country. There is no natural water-power but a small dam would serve to develop one of some value along the creek, which flows in a deep valley joining Round lake with Little Nut lake. This creek is locally known as Little Red Deer river, forming as it does part of Red Deer river system. The survey was made in December but the climate seemed very mild and equable. The only fuel available is wood, which can be procured any place in this township. No stone quarries, economic minerals or game were noticed.—*Geo. A. Grover, D.L.S., 1907.*

40. We reached the township by a fair trail from Wadena, Sask., to the Nut Lake Indian reserve, where we used an Indian trail running to Greenwater lake, crossing the west side of the township, and from there cut a trail running nearly due east along the north side of sections 21, 22, 23 and 24; this is the only trail in the township. The soil is a rich loam on clay and well suited for all kinds of agriculture. The country is covered by small poplar, with here and there larger poplar and bunches of spruce, particularly towards the north end. This end of the township is much broken by the Greenwater hills, but the south half is only gently rolling. The only timber of any size is in the above mentioned clumps of spruce scattered through the township, but more particularly towards the northeast corner. Good hay is plentiful throughout the township, both the marsh and upland varieties.



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 11—Continued.*

There is an abundance of water in the sloughs and creeks of the township and it is fairly good though rather alkaline. No water-powers, economic minerals, stone quarries or game were seen. The climate seemed very similar to Manitoba, but of course the survey was made in the fall of the year and frosts were frequent. Fuel is plentiful, wood being well distributed over the township. On the whole, I would consider this a first class township for settlers; at present it is chiefly suited for cattle, there being abundance of feed, water and shelter, but it should grow excellent crops when a railway gets near enough to provide a market for grain. The nearest railway at present is the Canadian Northern at Wadena, some fifty miles away. There are no settlers in the township at present, but the tide of immigration is gradually pressing this way. Some twelve miles south in similar country good crops are grown.—*Geo. A. Grover, D.L.S., 1907.*

45. The soil to the north of the Canadian Northern railway is generally clay and loam and would make good farm land, except near the west side, where it is nearly all muskeg. To the south of the railway it is nearly all muskeg except around section 8, which is more clay and loam. The surface is all thickly wooded. South of the railway it is mostly flat muskeg with small spruce and tamarack, but there is some scattered spruce and poplar from six to twenty inches in diameter. To the north it is rolling and there is also some scattered timber here and there over the whole township but not to any extent. Hay is very scarce. The water is all fresh and fairly plentiful. There is plenty of it in the muskegs, but not so much to the north except in lakes. There are no water powers. The weather was quite changeable, rather frosty at times and then mild again. We had about two inches of snow in November. The only fuel is wood, but it is plentiful everywhere. No coal, stone quarries or minerals were found and no game was seen.—*W. G. McFarlane, D.L.S., 1907.*

*Range 12.*

41 and 42. (*East boundary*)—The east boundary of township 41, range 12, starts in a hilly country at the base line. It is all very thickly wooded with small poplar and willow scrub, and descends somewhat rapidly towards the north. The soil here is good, but a large lake runs along the east side of the line for a mile and a half. Farther down the slope the soil is still good and the timber becomes larger. Spruce from six to thirty inches and poplar from six to ten inches are found in scattered clumps. All along there grows a dense underbrush of hazel and alder scrub, and this with windfall would make it very hard to cut a road through. A short distance to the west is Red Deer river running through a deep ravine. Numerous hay sloughs are also found. As we got nearer the north side of the township the line came out into smaller scrubby poplar with small openings of prairie. Here the soil is very good but a little farther north it crosses another muskeg or two and then runs into thick poplar, scattered six-inch spruce and tamarack and a few twelve-inch jackpine. The line crosses Red Deer river on the east boundary of section 25 and runs on through rolling scrubby country to the north boundary of the township. The country to the west is more open and would make fair ranching or farm land, while to the east there are some timber limits. The country is well watered with fresh water and the climate in the fall is bright and clear, but early frosts have been experienced. There are no houses except Indian shacks, and these are vacant.—*W. G. McFarlane, D.L.S., 1907.*

42. The route followed was by trail along the prairie in the valley of Crooked river down to the east boundary thence south and west along a good trail through small



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## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 12—Continued.*

poplar and willow until we came to some more prairie in section 35. The trail then follows south along a stretch of prairie down to the south chord, where it strikes Red Deer river. It is all good with the exception of three short soft holes. The soil here is more sandy than in township 43. It is generally a black sandy loam except near the south boundary west of Red Deer river, where it is very sandy. The northern part of the township would make very fair farm land, in fact some of it is exceptionally good to the north. The subsoil, however, is usually a little sandy. The surface is gently rolling. A stretch of prairie about thirty chains wide runs north and south along near the centre of the township and the rest is mostly covered with willow and poplar scrub. To the south there are several jackpine ridges and to the east some spruce and poplar two to ten inches in diameter. There is no timber of any value but a little poplar and spruce, six to ten inches in diameter is found near the east boundary, and a little jackpine of the same dimensions near the south boundary. Hay is fairly plentiful on the prairie and is of good quality. There is also some slough hay along near Red Deer river. The water is fresh and very plentiful in Red Deer and Barrier rivers, streams, muskegs and lakes. Red Deer river is a fine one. It is from fifty to one hundred feet wide, from three to eight feet deep, and has a current of about three miles an hour. It is very winding. It comes in at the south side of the township near the southeast corner and flows northwest until joined by the Barrier, and then northerly until it crosses the north chord, when it turns easterly and crosses the east boundary of section 25. The Barrier is fully larger than the Red Deer but is sluggish. It comes in near the centre of the south boundary and joins the Red Deer about one and a half miles up. They are both full of pike. The northwest corner of the township is muskeg and is flooded about a foot deep now (October). There are no water-powers. The weather was very fine and bright with frosty nights and clear bright days without rain or snow. Wood is the only fuel, but it is fairly plentiful everywhere. No coal, stone quarries or minerals were found, and jumping deer was the only game seen.—*W. G. Farlane, D.L.S., 1907.*

43. The route followed to this township was by the Canadian Northern railway to Crooked river, then by wagons on a trail running south. The trail follows along the foot of a hill for about ten miles and is very wet and muddy from springs and streams along the hillside for the first five miles. After we got five miles out we found the trail much better and only occasional soft holes. The soil in this township is generally very good with the exception of the southwest corner which is nearly all muskeg. It is a good sandy black loam usually with a clay subsoil, which would make very good farm lands. The surface is slightly rolling but is broken by the valley of Crooked river which takes its rise in this township and runs up through the centre of it. The valley is over one hundred feet deep at the north boundary. There is a strip of prairie in the valley and also some in sections 29 and 32. The greater part of the rest is covered with scrub but there are a few small clumps of timber. There is very little timber in this township. Only a few small clumps of poplar and spruce from six to twelve inches in diameter to the south and a little from six to fifteen inches near the north boundary. Hay is fairly plentiful on the prairie, and is of excellent quality. The water is fresh and very plentiful in streams, muskegs and swamps. The streams are all very small. The only part of the land liable to be flooded is the northwest and southwest corner, which are flooded now (November) from six inches to two feet deep. There are no water-powers. The weather was fine and bright. We had one snowfall of about an inch. It was frosty at nights and bright and warm in the day. The only fuel is wood, but it is quite plentiful almost everywhere. No coal, stone quarries or minerals were found. Moose and bear were



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 12—Continued.*

the only game seen. Settlers are coming into the township and a great part of it should soon be taken up. There is a cattle ranch just east of the boundary line.—*W. G. McFarlane, D.L.S., 1907.*

*Range 15.*

30. The south half of this township is rolling, broken in some places with dense growth of willow scrub and underbush interspersed with numerous hay sloughs, which are covered with good patches of prairie hay making very good pasture. The north half is more timbered with poplar suitable for building, most of it being ten to twelve inches in diameter. Black willow and clumps of dry poplar occur, the latter being good for fuel. The centre of this township is too low and swampy for cultivation at present. The soil is first class, being composed of black loam with clay loam subsoil. There are no creeks worth mentioning, although the township is very well watered by different lakelets and sloughs.—*A. Bourgeault, D.L.S., 1906.*

31. This township is generally undulating but becomes rolling towards the south boundary, the timber also becomes denser. The hollows or low places in the south part are generally covered with marshes or swamps, having a luxuriant growth of hay, surrounded by extensive belts of tall dry willow. This part is more or less timbered with medium sized poplar and some scattered white birch, both being suitable for building purposes. Large quantities of small willow also occur. The north half of the township is covered with scattered bluffs of poplar interspersed with patches of prairie. The soil ranks as first class all over the township, being composed of rich black loam and clay loam subsoil. There are some reddish coloured boulders and some fragments of limestone in large quantities on sections 33, 34, 35 and 36. This township is crossed by the branch of the Canadian Pacific railway, now under construction, running west from Yorkton. It crosses sections 36, 35 and will be of great advantage to this vicinity.—*A. Bourgeault, D.L.S., 1906.*

50. Lost River postoffice is situated on the northwest corner of section 6 of this township. It can also be reached by a trail crossing Saskatchewan river at Fort à la Corne and running north to township 50, range 16, thence easterly to this township, entering it on section 30, a distance of about fifty miles. This trail is in fair condition. The soil is sandy loam and should be suitable for mixed farming. The surface is wooded, covered with poplar and balm of Gilead, from two to ten inches in diameter, some spruce and tamarack, interspersed with large patches of poplar and willow scrub. Spruce up to fourteen inches can be found scattered over the township, but of no practical value for lumbering with the exception of a small grove of spruce running from twelve to thirty-six inches on the east boundary of section 10. A small portable mill might be used a season here to advantage. There are small hay sloughs all over the township from which a quantity of second quality hay could be obtained. There are a number of small creeks of good water running into Saskatchewan river. Red Deer creek touches the northeast corner of the township. It is a stream of good water about six or eight feet wide and three feet deep. There is no liability of flooding. Water-power could be developed from the Cadotte and Nipawin rapids on Saskatchewan river, but only at a great cost, as the banks are very high and but a few feet of head. The climate this fall was very mild, and open with very little snow. Large portions of Saskatchewan river remained unfrozen at the time of leaving this district (December). Deadwood in abundance can be obtained for fuel. No stone, coal or mineral were found. Moose, jumping deer and partridge were seen.—*R. H. Montgomery, D.L.S., 1907.*



## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 15—Continued.*

51. The soil in this township consists of clay, sandy and black loam, with clay subsoil. On sections 1, 25 and 36, the land is suitable for mixed farming. The township is wooded, covered with small poplar, tamarack and spruce, not exceeding eight inches. No hay sloughs were seen. A large muskeg runs south from section 24, to the middle of section 12 extending in places about one and one-half miles east and west. Two small creeks traverse the township, and with the muskeg afford an ample supply of good water and no scarcity is feared.—*R. H. Montgomery, D.L.S., 1907.*

52. The soil in this township consists of sand and black loam. The southern portion contains black loam averaging six inches with clay subsoil suitable for mixed farming. The township is entirely wooded, covered with poplar, balsam of Gilead, jack-pine, spruce and tamarack. The timber seen is a poor sample. A few second grade hay sloughs were seen. Torch river is a stream one hundred and thirty feet wide, six feet deep with a current of three miles an hour, which crosses the township in section 36. Whitefox river is a stream sixty feet wide four feet deep, with a current of three miles an hour and crosses the township in section 25. Both the rivers contain excellent water and no scarcity is feared.—*R. H. Montgomery, D.L.S., 1907.*

*Range 16.*

30. This township is generally rolling and undulating country except the west part of sections 18 and 19 which are hilly; more or less covered with dense poplar bluffs scattered all over the township; outside the bluffs it is small poplar and willow. There are a few sections which would have been worth mentioning as a timber reserve, but owing to the numerous settlers who hauled timber last winter for building, I do not think any reservation advisable. I have seen during the progress of survey a good many teams making one trip every day and lots of piles of timber all over the township. There are principally in the west parts many lakes which seem to increase yearly. The soil is first class being a good depth of black loam with a clay subsoil. There are also numerous sloughs and swamps surrounded by black willow. This township lies at the east end of Touchwood hills. It will not be fit for farming before a good fire has cleaned it.—*A. Bourgeault, D.L.S., 1907.*

31. This township is for the most part rolling and undulating country, interspersed with small poplar suitable for fencing, willow and underbrush. It has the advantage of being close to the branch of the Canadian Pacific railway running west from Yorkton, as this line, now under construction, runs close to the north boundary of sections 36 and 35. The south half of this township is very well timbered, especially the south half of sections 15 and 16, and east half of section 17 which is densely timbered with large poplar suitable for building. There are also numerous clumps of willow. A great many people came over thirty miles to cut logs here. The soil is good black loam with clay subsoil and ranks as first class all over the township. However, owing to the dense bush and windfall on the south half, it is not fit for immediate cultivation. I presume that before long, fire will burn up the brush and windfall. Hay is abundant in the sloughs and marshes. The water is, generally, good, but there is only one creek worth mentioning which runs in a northerly direction. There are many large boulders of reddish coloured granite, and a large quantity of limestone.—*A. Bourgeault, D.L.S., 1906.*

50. At the southeast corner of this township is Lost River postoffice. It can also be reached by trail, about forty-two miles from Fort à la Corne. This trail runs due north from the river to township 50, range 20 thence easterly entering this township in section 19. The condition is fair, but rather hilly near the river. The soil is



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 16—Continued.*

principally sand with belts of black loam and clay, only a small portion being suitable for mixed farming. The surface is entirely wooded, consisting of jackpine, poplar, spruce and tamarack bush, with poplar, jackpine, birch and willow scrub. Jackpine up to sixteen inches and poplar to fourteen inches can be found all over the township but not in sufficient quantities for lumbering purposes. No large hay sloughs were found. There are plenty of muskegs in this township and a few small creeks, affording an ample supply of good water. There is no danger of floods. No water-power is available. The climate last fall was warm and clear with little rain. The first frost was noticed on August 20th. Deadwood in abundance can be obtained for fuel. No coal, stone or minerals were found. Moose, jumping deer and part-ridges were seen.—*R. H. Montgomery, D.L.S., 1907.*

51. The soil in this township consists principally of clay, with a little sandy loam, and clay subsoil. It is suitable for mixed farming. The surface is entirely wooded, covered with small poplar, and balm of Gilead, not exceeding ten inches. No hay sloughs were seen. Whitefox river is a stream ninety-three feet wide, four deep, with a current of three miles an hour, which enters in section 19, and leaves in section 25. This river with several small creeks, afford an ample supply of good water and no scarcity is feared.—*R. H. Montgomery, D.L.S., 1907.*

52. The soil in this township is clay and black loam; a few belts of black loam averaging twelve inches with clay subsoil is to be found. The land is, generally speaking, low and only on sections 12 and 1 can be found land suitable for mixed farming. The township is entirely wooded, covered with spruce, poplar, balm of Gilead, balsam and birch. Some very good spruce up to thirty inches, and poplar up to twenty inches can be found through the township. No hay sloughs were seen. Fern creek, twenty-five feet wide, three feet deep with a current of one and one-half miles an hour, crosses the township in section 36. This creek with other small ones, afford ample supply of good water and no scarcity is to be feared.—*R. H. Montgomery, D.L.S., 1907.*

*Range 17.*

1. This township was reached from Weyburn by following the settlers' and ranchers' trail to Sandoff's ranch in township 3, range 16, then westward to the northwest corner of township 2, range 17, and from there southward along the east outline of township 2, range 17. The soil in this township is good and well suited for agricultural purposes, although the northeast part of the township is rather hilly. The surface is everywhere prairie with no timber. Redtop and marsh grass of good quality abound in the hay marshes. Good fresh water was easily obtainable in the marshes and sloughs at the time of survey (June) and snow-water was still to be had. No streams nor water-powers occur and the land is not liable to flooding. The climate at the time of survey was cool with light frosts. No fuel, stone quarries nor minerals were found. Duck was the only game seen.—*J. L. R. Parsons, D.L.S., 1907.*

2. This township was reached from township 1, range 17, by travelling northward along the central meridian. The soil is light but of fair quality; the south two-thirds of the township being well suited for agricultural purposes while the remainder is very rough and broken. The surface is everywhere prairie with no timber. Marsh grass and redtop of good quality are to be had in the small hay marshes which abound throughout the township. Good fresh water was readily found at the time of survey (June) in the numerous sloughs and marshes. No streams nor water-powers occur, nor is the land liable to be flooded. The climate was cool and wet at the time of sur-



## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 17—Continued.*

vey. No fuel, stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

30. (Part.) This survey included fractional sections 25, 36, 28 and 33 and sections 26, 27, 34 and 35, township 30, range 17. This part is rolling, hilly and broken, no wood worth mentioning, being more or less covered with small poplar and poplar and willow scrub and some scattered dry stumps of poplar. The soil is somewhat gravelly especially on the hillocks and it seems that all the alluvial soil had been burnt. It might rank first class. On account of lower spots where the soil is good black loam, it offers good pasture with abundant grass and peavine. The water is also plentiful and well distributed.—*A. Bourgeault, D.L.S., 1906.*

51. The soil in this township consists of clay, black and sandy loam. The northern portion has black loam averaging six inches with clay subsoil, and clay suitable for mixed farming. The township is wooded, covered with small poplar, balm of Gilead, jackpine, spruce and tamarack, not any exceeding ten inches. No hay sloughs were seen. Between sections 7 and 12 is a lake extending fifty-one chains south, about thirty chains east and about one and one-half miles west. Whitefox river is a stream fifty-five feet wide, three feet deep with a current of three miles an hour. It enters in section 19, and crosses in section 24. This river, with other small creeks and the lake, afford an ample supply of good water, and no scarcity is feared.—*R. H. Montgomery, D.L.S., 1907.*

52. The soil in this township is principally clay, the land is low, and soil too sticky for farming. The township is entirely wooded, covered with poplar, balm of Gilead, spruce and birch. Some good poplar up to thirty inches and spruce up to sixteen inches, can be found in the northern sections. A few small second grade hay sloughs were seen. Small muskegs and creeks traverse the township and no scarcity of good water is to be feared.—*R. H. Montgomery, D.L.S., 1907.*

*Range 18.*

1. This township was reached from township 1, range 17, by following the north boundary westward. It is very hilly. The soil is good, but owing to the north half of the township being very hilly, only the south half is suited for agricultural purposes. The surface is everywhere prairie, rolling in the south half, and very hilly in the north half. No timber is found. Good marsh hay is abundant in the numerous small hay marshes. Fresh water was readily obtainable in the numerous small sloughs and marshes at the time of survey (June). There are no streams and consequently no water-powers. The climate was warm and fine at the time of the survey with no frosts. There are no minerals, stone quarries nor fuel. The only game noticed was duck.—*J. L. R. Parsons, D.L.S., 1907.*

2. This township was reached from township 1, range 18, by a trail northward along the central meridian. This trail was very hilly in its southern part. The soil is light but of good quality. On account of the hilly nature of the two north tiers of sections and also of the two south tiers, only the centre is suited for agricultural purposes, the remainder being excellent grazing land. The surface is everywhere prairie with no timber. Abundance of good marsh grass and bluejoint are obtainable in the numerous small hay marshes throughout the township. Fresh water was plentiful at the time of survey (June) throughout the township, in the small sloughs and marshes. No streams nor water-powers occur and the land is not liable to be



SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 18—Continued.*

flooded. The climate is moderate, with no frosts at the time of survey. No fuel, stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

51. The soil in this township is principally black loam and clay. The land is, generally speaking, 'low,' and of very little use for farming. The timber in this township consists of poplar, balm of Gilead, spruce, and tamarack, from two to fourteen inches, a poor sample and useless. A large second grade hay slough is found on section 13, running south to the centre of section 12. There it develops into a muskeg which continues south to the centre of section 1, extending east and west as far as can be seen. Whitefox river is a stream seventy feet wide four feet deep with a current of four miles an hour, which enters in section 19, and leaves in section 24. This river, with a creek and several muskegs afford an ample supply of good water and scarcity is not feared.—*R. H. Montgomery, D.L.S., 1907.*

52. The soil in this township consists of gravel, clay and black loam. The southern portion has black loam averaging five inches with clay subsoil suitable for mixed farming. The township is entirely wooded, covered with poplar, balm of Gilead, spruce and tamarack. Spruce up to thirty-six inches and poplar up to twenty-four inches can be found scattered throughout the township. No hay sloughs were seen. Small muskegs and creeks are to be found. No scarcity of good water is to be feared.—*R. H. Montgomery, D.L.S., 1907.*

*Range 19.*

49. The township is reached by a trail running northwesterly from Fort à la Corne, centering on the west boundary of section 31. This trail is in a fair condition but rather hilly, near Saskatchewan river. The soil is chiefly sand with an occasional belt of black loam. The surface is covered with jackpine from two to ten inches in diameter with a few patches of poplar and jackpine scrub. Jackpine, spruce, poplar and tamarack are found in this township, but of no practical value for timber, owing to small size. There are no hay sloughs. English creek enters from the north crossing section 34, it is about ten feet wide, two feet deep and flows three miles an hour. There are also several other small creeks draining this township. The water is excellent but there is no water-power. The climate this summer was cool and damp, the first frost being noticed on August 20. Deadwood in abundance can be obtained for fuel. No coal, mineral or stone is to be found. No game was seen except partridges.—*R. H. Montgomery, D.L.S., 1907.*

51. This township lies about seventeen miles by trail north from Fort à la Corne. This trail runs due north from Saskatchewan river, entering this township on section 6. It is in fair condition but is inclined to be hilly near the river. The soil north of Whitefox river is black loam six inches deep with a clay subsoil, and is suitable for mixed farming. South of this river it is generally sand. The surface is entirely wooded. A few large patches of scrub can be found. Poplar, balm of Gilead, jackpine, spruce, tamarack and birch are here, while the scrub consists of poplar, jackpine and willow. On sections 22, 23, 26, 27, 34 and 35 some very good spruce is to be found, averaging from four to thirty inches, very suitable for lumbering purposes. Poplar up to fourteen inches and jackpine up to twelve inches can be found but of no practical use for lumbering. There are a few small hay sloughs scattered over the township producing a second grade of hay. Whitefox river cuts across the township entering on section 18, and leaving from section 24. It is a stream of good water fifty feet wide, six feet deep and has a current of about three miles an hour. There is a large



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## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 19—Continued.*

muskeg south of this river and could, if occasion demands it, be easily drained by this river. There is no water power. The climate this summer was cool and damp, and flies were numerous. The first summer frost was noticed on August 20th. Deadwood in abundance can be obtained for fuel. Coal, stone or mineral were not found. Moose, and partridge were to be seen.—*R. H. Montgomery, D.L.S., 1907.*

52. The soil in this township consists of black loam, and sand, the majority is black loam averaging five inches with a subsoil of clay suitable for mixed farming. The township is entirely wooded covered with spruce, tamarack, poplar, jackpine and balm of Gilead. Spruce and poplar up to sixteen inches can be found in the northern portion. A few hay meadows with firstclass hay were seen. There is a large muskeg in the northern portion of this township and a creek, so no scarcity of good water is to be feared.—*R. H. Montgomery, D.L.S., 1907.*

*Range 20.*

50. This township lies ten miles from Fort à la Corne by trail. It can be reached by a wagon trail straight north of Saskatchewan river. This trail is in fair condition, but rather hilly. The soil is principally sand, with a few patches of black loam and clay. The surface is wooded, covered principally with jackpine. There is also spruce, tamarack and poplar, with poplar, jackpine and willow scrub. The jackpine averaging from 2 to 10 inches in diameter is the only timber to be found. There is one lake on section 18 in this township, while large muskegs are found scattered all over it, but no creeks are to be found. There is no danger of drought or flood. No water-power is available. No hay sloughs are to be found. The climate this year has been damp and cool, the first frost being noticed on August 20th. Deadwood in abundance can be obtained for fuel, but no coal, stone or mineral are to be found. Moose and jumping deer are plentiful.—*R. H. Montgomery, D.L.S., 1907.*

51. This township lies about seventeen miles by trail from Fort à la Corne. This wagon trail runs northerly from Saskatchewan river, and is in good condition, but is inclined to be hilly near the river. It enters on section 5, north of Whitefox river, the soil is black loam, averaging sixteen inches, with clay subsoil, and the land should be suitable for mixed farming. South of Whitefox river the soil is principally sand. The surface is wooded with large patches of scrub, poplar and Balm of Gilead, with poplar and willow scrub north of the river, and jackpine, spruce and tamarack south of it. The timber consists of jackpine, poplar, balm of Gilead, spruce and tamarack, but it is too small for any lumbering purposes. Whitefox river has a width of forty feet, a depth varying from two to ten feet and a current of two and one-half miles per hour. The water is excellent. It enters the township in section 18, and leaves from section 13. Large muskegs lie to the south of Whitefox river. There is no water-power available. There are no hay sloughs. The climate this summer has been cool and damp, the first frost being noticed on August 20th. Deadwood in abundance can be found for fuel. No stone, coal or mineral can be found. Moose and jumping deer were seen.—*R. H. Montgomery, D.L.S., 1907.*

52. The soil in this township consists of sand, clay, black and sandy loam. The southern portion has a belt of sandy and black loam, averaging six inches, with clay subsoil suitable for mixed farming. The township is entirely wooded, covered with spruce, tamarack, jackpine and poplar, but a poor sample, too small for lumbering purposes. No hay sloughs were seen. Several small creeks and muskegs are to be found through the township and no scarcity of good water is to be feared.—*R. H. Montgomery, D.L.S., 1907.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 21.*

50. This township lies about fourteen miles by trail from Fort à la Corne. It can be reached by a wagon trail running north from Fort à la Corne to the south boundary of township 50, range 20, thence running northwesterly entering this township in section 13. This trail is in fair condition but is hilly near Saskachewan river. The soil is mostly sand with occasional belts of black loam and clay. The surface is wooded, covered principally with jackpine. There is also spruce, tamarack and poplar with willow scrub. The timber on this township consists of jackpine averaging from eight to twelve inches and could be used for ties. There are no large hay sloughs to be found. Plenty of small hay sloughs covered with scattered willow are present. There are no large creeks but large muskegs are found all over the township in which the water is fresh. There is no danger of flooding. There are two lakes in the township, lake No. 1 in section 7 and 18 and lake No. 2 in section 13. There is no available water-power. The climate this year has been damp and cool, the first frost being noticed on August 20. Deadwood in abundance can be found for fuel, but no coal, stone or minerals are to be found. Moose, jumping deer, duck and sand-hill crane are plentiful.—*R. H. Montgomery, D.L.S., 1907.*

52. The soil in this township is principally sand and black loam. A belt of black loam averaging twelve inches, with a clay subsoil runs across the southern portion. This township is suitable for mixed farming. It is entirely wooded, covered by spruce, jackpine, tamarack and poplar, and some good spruce up to thirty-six inches in the northwest corner of this township around Birchbark lake. Poplar up to twenty-four inches can be found in the western portion. No hay sloughs were seen. Birchbark lake lies in the northwest corner, several small creeks traverse the township, also large tamarack and spruce muskegs are to be found. No scarcity of water is to be feared.—*R. H. Montgomery, D.L.S., 1907.*

*Range 22.*

44. We entered this township by a good trail from Kinistino. The northern part of this township is fairly level, the southern part rolling and hilly, while the whole is covered with thick poplar and willow, except a few places which have scattered bluffs of poplar and willow. About one-half the township is covered with sloughs, swamps and deep muskegs; so much so that we were unable to complete the northeast portion which will have to be done in the winter or when the lakes are frozen over. For this reason we had great difficulty in doing as much of the survey as we did. The soil throughout is first class, the alluvial soil being black loam varying in depth from five to twelve inches, with a clay subsoil. Hay is obtained in abundance from the many marshes. The water in the many sloughs, lakes, &c., is sweet and good, while the supply is unlimited. In the spring the water around these lakes and marshes is considerably higher than during the summer. There are no water-powers, indications of coal, minerals or stone quarries. There are only three or four settlers in this township. A surveyed trail runs into this township from the north for a few miles. A deep creek running across this township is crossed by a fairly good bridge on the surveyed trail. By far the greatest portion of this township is unfit for cultivation. We did not have, nor did we hear of, summer frosts. Very little game was seen, except ducks, geese and pelicans, which were quite numerous.—*E. W. Hubbell, D.L.S., 1907.*

51. This township is situated about thirty-five miles by road northeast of Prince Albert. A trail leading into it leaves the Candle lake trail about thirty miles from Prince Albert. Both trails are in poor condition. The soil consists of a heavy black



## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 22—Continued.*

loam sixteen inches in depth with a clay subsoil, and the land generally speaking would be excellent for mixed farming. The surface is well wooded, but hay sloughs and meadows are numerous. Poplar averaging from two to six inches in diameter is generally found with poplar and willow scrub. There is little timber. Spruce averaging from four to thirty inches is found on sections 11, 12, 31 and 32, and poplar on the eastern portions of sections 7 and 31. There are numerous hay sloughs of second class quality all over the township. They are generally found adjoining Whitefox river. This river enters the township on the west boundary of section 30 and leaves on the east boundary of section 1. Where it enters the township it is about thirty feet wide and two feet deep with a current of two miles per hour. But from the northeast corner of section 10 to where it leaves the township it is one hundred feet wide, two feet deep and has a very sluggish current. A large tamarack muskeg at the south covers about one-third of the township. This could be easily drained into the river and a tract of very rich land could be secured. There is no water-power. The climate is very mild in summer, the first frost being noticed on the twenty-second of August, while open water was not frozen over till the fifteenth of November. There is no scarcity of deadwood for fuel, but no coal or minerals are to be found. There are stones and boulders along the river. Moose, deer and duck were the only game seen.—*R. H. Montgomery, D.L.S., 1906.*

52. This township lies about forty miles by trail from Prince Albert. It can be reached by following the Candle lake trail to township 52, range 23, thence easterly to the township by a pack trail. The northeast portion of the township is sandy and the remainder is black loam sixteen inches deep with a clay subsoil. The surface is entirely wooded, being covered with spruce, jackpine, poplar, birch and large patches of poplar and willow scrub. Birchbark lake cuts off the northeast corner of the township. It is a large pear-shaped body of water, with the apex to the south. It is about four miles long and four miles wide and extends south along the east boundary of this township for two miles. The main portion of the lake, however, is in township 53. Loon lake lies in sections 6 and 7. It is about one and a half miles long by one-half mile wide. The surface of this township is somewhat hilly. Large muskegs are found adjoining Birchbark lake on the southwest shore. Hay sloughs are found scattered throughout the township and should render the land suitable for mixed farming.—*R. H. Montgomery, D.L.S., 1906.*

*Range 23.*

4. This township was reached from township 4, range 18, by following the second base line westward. The soil is good, supporting a luxuriant growth of upland grass. The southern part of the township is too hilly and broken to be of use for agricultural purposes, but the northern part is good agricultural land. The surface is prairie with no timber, except a small amount of poplar scrub in the ravines in the southern part. A considerable amount of hay is found in the numerous small hay marshes throughout the township. Fresh water is everywhere to be found in the marshes and sloughs, but no water-powers occur and the land is not liable to be flooded. The climate is moderate with no summer frosts. A small amount of deadwood is found in the ravines in the southern part of the township. Coal occurs on the south shore of Coalmine lake. It is a low grade lignite, but burns readily in an ordinary cookstove. A considerable amount has already been taken out by the settlers from the adjacent country. No stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907,*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 23—Continued.*

46. This township is partially covered with poplar and willow of small dimensions, there being some poplar in the southwest portion suitable for building and fencing. The surface is generally undulating, becoming more hilly towards the west. The alluvial soil is black loam varying in depth from two to eight inches with a clay subsoil suitable for the production of all kinds of grain and vegetables. A permanent supply of fresh water is obtained from wells, numerous small lakes and several creeks. Plenty of hay is procurable from the many marshes and meadows. There are no water-powers, nor did we perceive traces or indications of coal or minerals. The Canadian Northern railway passes through this township and the station of Brancepeth is situated in section 34. There is also a church, postoffice and two schoolhouses. This township is well settled, having considerable land under cultivation. Farm produce is hauled to Birch Hills and Kinistino, two small towns situated on the Canadian Northern railway, distant eight and fifteen miles respectively. A fair amount of statute labour has been accomplished on the road allowances, and several bridges built. There are good trails branching in every direction, the main one (surveyed) leads to Prince Albert, distant forty miles. Some jumping deer, coyotes, foxes and muskrat are found, whilst geese and ducks are most plentiful in the autumn.—*E. W. Hubbell, D.L.S., 1907.*

50. This township lies about twenty-five miles from Prince Albert. It can be reached in two ways; first, by following the Fort à la Corne trail south of Saskatchewan river to range 22, thence north by trail crossing the Saskatchewan and entering the southeast corner of this township. The condition of this trail is excellent and since a ferry is to be established next summer where this trail crosses the Saskatchewan, it will be the better route. The second route follows the Candle lake trail about twenty-five miles and then follows another trail running southeast through township 51, range 23 to the north boundary of this township. It is in very poor condition. The soil is variable, the northwestern portion being composed of a heavy black loam, averaging fourteen inches deep with a clay subsoil, while the southeastern portion consists of a sandy loam. Generally speaking, this township should make an excellent mixed farming district. The surface is wooded, with poplar from two to eight inches in diameter, and poplar and willow scrub. The southeastern portion of the township is somewhat scrubby. Numerous hay sloughs are found all over the township, producing hay of excellent quality. Spruce timber suitable for building purposes is found on sections 3, 13, 24 and 34, and poplar on sections 5, 6, 9, 15, 19, 23, 31 and 33. Garden river enters the west boundary of section 6, flows southeast and leaves on the south boundary of section 5. It is seventy-five feet wide, three feet deep and has a current of about one mile per hour. It contains excellent water. A chain of muskegs extends across the northern portion of the township. There is no water-power available. The climate is mild in summer, the first frost being noticed on the twenty-second of August, while open water was not frozen over until the fifteenth of November. Deadwood in abundance is the only fuel procurable. There is no stone, mineral or coal in the township. Deer, moose, and prairie chickens were seen. A large colony of Galicians was situated on section 1 of this township, but as they were unable to speak English, no declarations were taken.—*R. H. Montgomery, D.L.S., 1906.*

52. This township lies about thirty miles by trail from Prince Albert. It is reached by the Candle lake trail, which enters it at section 5 and leaves it at section 32. This trail is in poor condition. The soil is generally a black or sandy loam about sixteen inches deep with a clay subsoil. There are several large patches of prairie



## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 23—Continued.*

along Candle lake trail, such as 'Fox plain,' in sections 29 and 32. The northeast, northwest and southeast corners of the township are heavily timbered with spruce and poplar, the remainder being covered with poplar and willow scrub interspersed with large hay sloughs. Several small streams were found crossing the township. Whitefox river flows out from a muskeg on the south boundary. The land appears to be suitable for mixed farming.—*R. H. Montgomery, D.L.S., 1906.*

52. This township is forty miles from Prince Albert, near Candle Lake trail, which is usually in bad condition for travel. The soil is from two to eighteen inches of black loam and is suitable for mixed farming. The surface is slightly rolling, covered with poplar and hazel, with a few scattered spruce and large clusters of spruce in sections 4, 9, 2, 11, and 12. Whitefox river is the source of water supply which is sufficient and permanent. A very few hay sloughs and with the exception of a little feed along the river and around a few small sloughs there is no hay. The land is not liable to be flooded. The climate is wet and cool at night with summer frosts. Poplar is the fuel, and is available any place. There are no stone quarries, or minerals of any kind. There are numerous deer and bear with a few partridges and ducks. Beaver are scarce, but there are still a few in Whitefox river. Fox plain is a large opening in section 29 west of the river. The surface is covered with scattered willow and swampy grass.—*A. L. MacLennan, D.L.S., 1907.*

*Range 24.*

4. This township was reached from township 4, range 23, by travelling westward along the second base line. The soil is of fair quality but the country is so broken in the south part that only the north two-thirds is suited for agricultural purposes. The surface is everywhere prairie with no timber. Fresh water of good quality is readily found in the numerous sloughs and marshes. Big Muddy creek crosses the southwest corner of section 6. At this point it is twelve links wide, eighteen inches deep and, at the time of survey (June) was flowing at about one mile per hour in well defined banks. There is no likelihood of flooding. There are no water-powers. The climate is moderate with no frosts at the time of survey. A little deadwood is found along the south boundary in the ravines which lead into Big Muddy bottom. No stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

51. I reached this township via Candle Lake trail to 'Fox plain.' The roads are very bad. The soil consists of from twelve to eighteen inches of black loam and is eminently adapted for mixed farming. The surface is slightly rolling, timbered with poplar to ten inches in thickness. There are several small hay sloughs, the water is slightly alkaline, and the supply is neither sufficient nor permanent. The land is not liable to be flooded. The climate is wet and cool at night with frosts during the summer months. Poplar is the available fuel and can be procured in any part of the township. There are no stone quarries, or minerals of any kind. There a few deer, bear, partridge and duck.—*A. L. MacLennan, D.L.S., 1907.*

52. I reached this township via Candle Lake trail to 'Fox plain.' The roads are very bad. The soil consists of from twelve to eighteen inches of black loam, and is eminently adapted for mixed farming. The surface is slightly rolling timbered with poplar to ten inches in thickness. There is a large muskeg in the southwest corner of the township. There are several small sloughs which yield a quantity of good hay. The water in the sloughs is slightly alkaline. The supply is neither sufficient nor per-



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 24—Continued.*

manent, and there is no land liable to be flooded except that part already under muskeg. The climate is wet and cool at night with frosts during the summer months. Poplar is the available fuel and can be procured in any part of the township. There are no stone quarries nor minerals of any kind. There are a few deer, bear, partridge and duck.—*A. L. MacLennan, D.L.S., 1907.*

*Range 25.*

9. This township was reached from township 9, range 26, by travelling along the base line. The soil is of poor quality, being chiefly sand and gravel, and is unfit for agricultural purposes. The township is suited only for grazing. The surface is rolling and hilly prairie with no timber. Marsh grass and redtop are abundant in the numerous small hay marshes. Fresh water is easily found in the hay marshes and sloughs. No streams or water-powers are found, and the land is not liable to be flooded. At the time of survey (July) there was a violent storm with rain and hail but no frosts. No fuel, stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

51. This township can be reached from the Egg lake trail or the Candle lake trail, the latter is considerably shorter but in much poorer condition. The soil is suitable for mixed farming. The township is timbered with poplar, hazel, and mixed scrub with a few odd spruce. The shores of Egg lake are bordered with a hay meadow, which produces probably 1,000 tons of good hay each year. The water in Garden river is sufficient and permanent. This river is twenty-five feet wide and two feet deep. It runs over a gravel bottom at the rate of two to four miles an hour. The land is not liable to be flooded to any extent. There are several rapids in the stream but it is not practicable to develop any water-power. The climate is very wet and cool at night with frosts during the the summer months. The fuel is poplar, which can be procured any place. There is no coal, lignite, stone quarries nor minerals. There are a few moose, deer, bear, foxes, and lynx, while ducks are numerous. In sections 3, 10, 15, 22, a few hundred feet back from Garden river, is a high rolling surface covered with a light poplar scrub, the most suitable place for agricultural purposes in the township.—*A. L. MacLennan, D.L.S., 1907.*

52. I took the Candle lake trail from Prince Albert to 'Fox plain,' which is in township 52, range 23, and came west from that place. It is possible to reach this township from the Egg lake trail, both roads are very bad in the wet season; the latter is more preferable. The soil is suitable for mixed farming. The township is timbered with poplar, hazel and willow scrub. With the exception of the hay, which is of good quality in sections 5 and 6, there is very little pasture of any kind. The water in Garden river, which is the main source of supply, is sufficient and permanent. This river is twenty-five feet wide and two feet deep running over a gravel bottom, with a few large limestone boulders, at the rate of two miles an hour. The land is liable to be flooded in the vicinity of Garden river to the depth of two feet. There are a few rapids in the stream but the water-power available is practically nil. The climate is very wet and cool at night, with frosts all the summer months. The fuel is poplar, which can be procured any place. There is no coal, lignite, stone quarries nor minerals in the township. There are a few moose, deer, fox and lynx, while ducks are numerous.—*A. L. MacLennan, D.L.S., 1907.*



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## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 26.*

9. This township was reached from township 9, range 27, by travelling eastward along the third base line. The soil is light, but would make fair farming land. The surface is everywhere prairie with no timber. A considerable quantity of marsh grass and redtop occurs in the numerous small hay marshes. Fresh water is found in the sloughs and marshes, and is easily obtainable. No streams nor water-powers occur and the land is not liable to flooding. The climate is moderate with no summer frosts. No fuel, stone quarries nor minerals were found. Duck was the only game seen.—*J. L. R. Parsons, D.L.S., 1907.*

45. This township is partly covered with small poplar and willow. The soil generally is sandy loam suitable for the production of wheat, oats and vegetables. There is no water-power, or minerals of economic value. Very little hay is in this township. There is a lake of about eighty acres in lots Nos. 11, 12, 13 and 14.—*E. W. Hubbell, D.L.S., 1907.*

49. We entered this township by crossing the ferry at Prince Albert and then followed a trail which leads to Candle lake. The soil except in one or two places is pure sand and not fit for agricultural purposes. The surface is rolling, hilly in places and nearly all covered with thick timber, principally jackpine varying in diameter from four to fourteen inches. There are several large clumps of poplar, but most of the good timber has been cut. Considerable timber is cut in this township to supply fuel for the city of Prince Albert and the district surrounding it. There is little or no hay in the township except in the northern portion along the north boundary. A good supply of water is obtainable from several sloughs, from a few creeks and from Little Red river, which is about sixty or seventy links wide, three to eight feet deep and flows at the rate of four or five miles an hour. This river is of immense value for lumbering, rising as it does many miles north of this township, flowing through it and emptying into Saskatchewan river in section 10. Great quantities of sawlogs were coming down at the time of survey (August) and several lumber camps were stationed along its banks. We did not perceive any falls or rapids, but doubtless considerable horsepower could be developed by the construction of dams. The water is fresh, but brackish. We had a little frost on August 24, and again on September 14. We did not notice any indications of coal, minerals or stone of importance. Saskatchewan river cuts off a portion of the southern part of the township, and a forest reserve embraces about nine square miles in the southwest corner. There are very few settlers in this township, mostly half breeds, who have small shacks situated along the banks of the Saskatchewan. We did not see any game, or hear of any, except a few beaver in Little Red river. All kinds of berries were plentiful. A good iron bridge crosses Little Red river in section 14.—*E. W. Hubbell, D.L.S., 1907.*

52. The route to the township is by the Egg Lake trail. The soil is from two to eighteen inches of black loam, suitable for mixed farming. The surface is gently rolling except in the northwest part of the township which is inclined to be hilly and is timbered with eight-inch poplar, a few twelve-inch Banksian pine and a few eight-inch spruce in the valley of Bittern creek in the northwest part of the township. Hay can be procured on the shores of Murray and Mertock lakes, but it is not of the best quality. Bittern creek is about fifteen feet wide and two feet deep. The water is sufficient, fresh and permanent. It runs over a gravel bottom at the rate of two miles an hour. The land is not liable to be flooded and there is no water-power. The climate is wet and cool at night with summer frosts. The fuel is poplar and is available any place. There are no stone quarries nor minerals of any description. There



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 26—Continued.*

are a few moose, deer, bear, lynx, and muskrats, also a few partridge and numerous duck.—*A. L. MacLennan, D.L.S., 1907.*

*Range 27.*

9. This township was reached from township 6, range 30, by following the Moose-jaw-Wood mountain trail to the third base line and thence easterly. The soil is light but of fair quality, and is suited for agricultural purposes. The surface is everywhere prairie. No timber is found. Marsh grass and redtop of good quality are to be found in the numerous small hay marshes throughout the township. Fresh water was easily obtainable at the time of survey (July) in the sloughs and marshes which abound in the township. No streams occur and the land is not liable to be flooded. There are no water-powers. The climate is moderate with no summer frosts at the time of survey. No fuel, stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

41. The surface of this township is mostly rolling or hilly, being very hilly in the northwest corner, rolling in the north half of the northeast quarter, rolling along the south and west boundaries, and rolling to hilly in the interior and in sections 13, 14, 23 and 24. The greater part of the surface is covered or dotted with poplar bluffs, with large prairie openings. Nearly every section has timber in bluffs large enough for rough buildings, fencing and fuel. The heaviest belt is in sections 12 and 13, where the north half of section 12 and the south half of section 13 is almost one solid tract of poplar, mostly fine growing timber from four inches to twelve inches in diameter, which if it can be kept from destruction by fire, will furnish an immense amount of building material. This timber would be of great use and value to settlers in the townships to the south that have no timber. There is a large lake (water slightly alkaline) in sections 16, 17, 20 and 21 and one on the east side of sections 13 and 24. The water is fresh. Many sloughs are found all over the township, the greatest number being in the east half. The water is fresh in the majority of these sloughs. These water areas furnish the only natural drainage, there being no streams or hardly any other outlets. There is very little of the ground that is not good for cultivation or grazing. The soil is mostly a good sand loam on sandy and clayey subsoils. It will produce good wheat and other cereals. From the more or less broken surface of the ground it is not adapted to exclusive grain growing. Hay of good quality is to be had from around nearly all sloughs and on the low ground. No large quantity can be cut in one place, but there is sufficient to supply the needs of intending homesteaders. No water-power, stone quarries or minerals of economic value were found. Settlement is gradually decreasing game. Coyotes, skunks, muskrats and gophers are still plentiful. Traces of foxes, badgers, and jumping deer were seen. Duck and prairie chicken are plentiful in their season. Geese and sandhill crane were scarce.—*Wm. R. Reilly, D.L.S., 1906.*

42. The west half of this township is hilly. Through these hills, a comparatively level pass extends westerly in the south through sections 16, 17 and 18, westerly in the north through sections 21, 29, and 30 and northerly through the east half of section 33. The old Hudson's Bay Company's trail to Prince Albert runs through here. Through the other passes are farm trails. The southeast quarter is mostly rolling, the northeast quarter undulating to rolling. The west half and southeast quarter is thickly dotted or partially covered with heavy poplar bluffs and thick willow clumps and underbrush. The poplar is large enough for rough building purposes, fences, &c. The northeast quarter is mostly open country, with odd poplar bluffs and clumps of willow.



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## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 27—Continued.*

The soil is generally a good sand loam from four to ten inches deep on a sandy subsoil. Some patches of clay loam were found along the north boundary and in other odd places. There are several large lakes in the township in the following sections: one in sections 12 and 13, one in section 6, one in section 7, one in sections 19 and 30, and one cutting the northwest quarter of section 31. The water in all these lakes is strongly alkaline. A number of small sloughs is scattered all over the township with water mostly alkaline. The original survey shows a large lake in the flat in section 28. This has dried up and is now a hay meadow. Hay of good quality can be cut in small quantities around nearly all sloughs and on the low ground. A large quantity can be cut south of the lake in section 12 and an immense quantity in the flats on sections 21, 22, 23, 26, 27 and 28. From these flats water seems to drain westward into the lake in sections 19 and 20 and eastward to Carrot river and, I believe, forms the source of that river. An old Hudson's Bay Company's trail to Prince Albert passes through sections 13, 24, 25, 26, 35, 34 and 33. It is not used to any great extent at present and is entirely obliterated in places. No water-powers, stone quarries or minerals of economic value were found. Coyotes, muskrats, skunks, gophers, ducks and prairie chickens were frequently seen while other game was scarce.—*Wm. R. Reilly, D.L.S., 1906.*

*Range 28.*

41. This is a fractional township adjoining the third meridian. The surface is rolling to hilly land, partially covered with clumps or large stretches of poplar. The northwest quarter of the township is comparatively open. In most cases the hills are not abrupt but rise with gradual slopes, and can be readily cultivated. Sloughs are not numerous but some are found on every section, the water being mostly alkaline. A lake was traversed in section 18. It is wooded on the south and west sides. A small creek from the hills on the south runs into the south end of this lake. The ground is rough around this end, while the water, except where the creek enters is strongly alkaline and not fit for stock. The soil is sand and clay loam, not class one but yet good farm land. The township is settled almost entirely by Galicians, nearly every homestead being taken up. These people are putting up good warm farm buildings. They are almost all built of logs plastered both inside and outside with mud, and whitewashed. The roofs are thatched with straw and some of them are exceedingly well done, making picturesque looking buildings. In a number of cases a large amount of land has been broken, but in the majority of cases a settler has only a small area under crop. The farm work is done mostly by cattle, the finest work cattle I have seen in the country. Threshing was in progress during the time of survey, (November). The grain was of good quality and the crops an average one. The season was favourable for farming, with frequent rains in July and June, very little summer frost and an exceptionally fine fall. A light snowfall, the first of the season, occurred on November 1, but it disappeared in a couple of days. A considerable quantity of hay can be cut around sloughs and on low ground. The district is best suited for mixed farming. An old cart trail to Prince Albert passes diagonally northwest through the township, but it is destroyed in places and very little used. Farm trails run in all directions, but as they have no particular beginning or ending they have not been noted. Poplar is found large enough for log building, fencing and fuel, and its value to the settler can hardly be estimated.—*Wm. R. Reilly, D.L.S., 1906.*

42. This, like township 41, is a fractional township adjoining the third meridian. It is very much like 41. The west half is rolling and the northeast quarter hilly. It is dotted with clumps and stretches of poplar with large prairie openings. The



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## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 28—Continued.*

heaviest clumps are along the north and east boundaries. The southwest portion is comparatively open. There are very few sloughs on the greater part of the township. Sections 13, 24, 25, 26, 35 and 36, are much broken by sloughs and lakes. The soil is clay or sandy loam not of the best kind but good farming land. This township, like 41, is settled almost entirely by Galicians. The majority of homesteads have been taken up and in a number of cases a large amount of breaking has been done. The buildings put up by these people in townships 41 and 42, ranges 27 and 28, are similar, being built of logs, plastered inside and outside with mud, and whitewashed, the roofs being thatched with straw. They prove very warm substantial buildings. Seeding started early in the spring with fine weather. Frequent showers in June and July, good harvest weather and an exceptionally fine fall made it a good season for farming.—*Wm. R. Reilly, D.L.S., 1906.*

*Range 29.*

6. This township was reached from township 9, range 25, by following the trail from Regina to Wood mountain to the northeast corner of township 6, range 27, thence westerly. This trail was in excellent condition. The soil in the two north tiers of sections of the township is good and well-suited for agricultural purposes. The soil surrounding Montague lake is alkaline and stony and fit only for grazing. South of the lake the land is very hilly and broken and is also grazing land. The surface is prairie except a little scrub and small poplar which occur in the ravines along the south side of the lake. No timber is found. Fresh water was found at the time of survey (July) in the marshes and sloughs. A creek drains Montague lake to the southeast; it is twenty links wide and two feet deep near the lake, and at the time of survey was flowing very sluggishly between well defined banks. The land is not liable to flooding. No water-powers are found. The climate is moderate with no summer frosts. A small amount of firewood is obtained in the ravines along the south side of Montague lake. No stone quarries nor minerals were found. Duck was the only game seen.—*J. L. R. Parsons, D.L.S., 1907.*

20, 21 and 22. The western meridian through townships 20, 21 and 22, range 29, passes over a dry country without bush of any description, the surface of which is generally level to undulating. The soil is sandy loam, suitable for producing wheat, oats, barley, flax and vegetables. We passed through several immense areas of wheat fields in this district. The Canadian Pacific Railway Company have under construction a railway from Moosejaw to The Elbow, on the south branch of Saskatchewan river. It passes through section 30, township 20, range 29. When finished it will be undoubtedly of immense advantage to the surrounding settlers. We did not perceive many hay meadows. The sloughs passed contained surface water, generally, and later in the season became dry. We did not hear of summer frosts, nor did we notice indications of coal, stone quarries or minerals. There is no water-power, and no game except the feathered kind.—*E. W. Hubbell, D.L.S., 1907.*

*Range 30.*

4. This township was reached from township 5, range 1, by travelling southeast to Spring Creek ranch in section 13, township 5; thence by the ranchers' trail to telegraph line trail which crosses the south part of township 5, range 30. The soil is light and gravelly in many places and is best suited for grazing purposes. The surface is everywhere prairie. The east two-thirds of the township is hilly and rough



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## TOWNSHIPS WEST OF THE SECOND MERIDIAN.

*Range 30—Continued.*

while the west one-third is rolling. There is no timber. Good marsh hay is abundant in the numerous small hay marshes throughout the township and in the valley of Haymeadow creek, which flows easterly through the south tier of sections. Fresh water was easily obtained at the time of survey (August) in the marshes and sloughs and in Haymeadow creek. No water-powers exist nor is the land liable to be flooded. The climate is moderate, with no frosts at the time of survey. No fuel occurs in the township, but a limited amount exists in the township immediately north. No stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

5. This township was reached from township 9, range 25, by following the police trail from Regina to Wood mountain. It was in good condition. The soil is light in quality, and on account of the broken nature of the surface is suited only for grazing purposes. The surface is rolling and hilly prairie, with no timber, broken on the north and west sides of the township by deep ravines in which small bluffs of poplar and willow occur. Hay of good quality is to be found in the small hay marshes in the township. Fresh water occurs in the marshes and in the two creeks. One creek runs northerly through the west (fractional) tier of sections; it is ten links wide, one foot deep and has a current of one and one-half miles per hour. The other joins this one from the east, draining a deep ravine in sections 35, 34 and 33. It is six links wide, one foot deep and has a current of one and one-half miles per hour. There is no water-power. The climate is moderate, with no frosts at the time of survey (July). Fuel consists of small poplar and willow occurring in the ravines along the north and west sides of the township. There is said to be lignite coal in all the hills, but none, however, was seen. There are no stone quarries nor minerals. Duck is the only game.—*J. L. R. Parsons, D.L.S., 1907.*

6. This township was reached from township 6, range 29. The soil is of good quality, suitable for agricultural purposes. The surface is level and rolling prairie with no timber. Good hay is found in the small hay marshes in the township. Water was plentiful at the time of survey (July) in the small marshes. There is no water-power in the township. There is no fuel but some wood can be obtained in township 5, range 30. No stone quarries nor minerals were found. The only game was duck.—*J. L. R. Parsons, D.L.S., 1907.*

17. (*Eastern Boundary*).—The surface of the east boundary of township 17, range 30, is generally rolling and undulating, but more broken and hilly at the south end. The soil throughout is sandy loam rated second class, suitable for growing wheat, oats, barley, &c. There is no wood in this township. The main line of the Canadian Pacific railway crosses section 25. There are no hay meadows of any account and very little water. Good sweet water is obtained from a couple of small creeks. There is no water-power, nor did we see indications of coal, stone quarries or minerals.—*E. W. Hubbell, D.L.S., 1907.*

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 1,*

4. This township was reached from township 4, range 30, west of the 2nd meridian, by following the telegraph line trail westward. It was in excellent condition. The soil is of poor quality, there being a great deal of gravel so that the township is suited only for grazing purposes. The surface is prairie with no timber. It is very hilly and broken throughout. Hay of excellent quality, blue joint and red top, is



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 1—Continued.*

found in abundance along the valley of Haymeadow creek, which crosses the township from northwest to southeast. Large quantities of hay are annually cut here by ranches of the district. Fresh water was to be found in the sloughs and marshes at the time of survey (August) and also in Haymeadow creek, which averages ten links wide, eighteen inches deep and flows with a current of one and one-half miles per hour. No water-powers occur. The climate is moderate, with no frosts at the time of survey. There is no fuel in this township, but a good supply can be obtained in the township to the north. No stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

5. This township was reached from township 5, range 30, west of the 2nd meridian, by following the old trail to Elm Springs and Wood mountain. It was in good condition. The soil is of good quality, supporting an excellent growth of upland grass. On account of the broken character of the country, it is suited only for grazing purposes. The surface is chiefly prairie with no timber, except some small bluffs of small poplar and willow in many of the ravines. The township is very rough and is broken by deep ravines which drain northward into the valley of Twelvemile lake. Numerous springs are to be found in the ravines and coulées, containing excellent water. These springs feed small creeks in each ravine which drain northward into Twelvemile lake. There are no water-powers, nor is the land liable to be flooded. The climate is moderate with no summer frosts. There is an abundance of wood in the township. Coal is found in many of the hills by ranchers of the district and mined for kitchen purposes. It is a low grade lignite and occurs in thin seams. No stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

6. This township was reached from township 5, range 30, west of the second meridian, by following the old trail to Elm Springs and Wood mountain. The soil in this township is of good quality and is fine rolling land, except along the shores of Twelvemile lake, where the land is cut by deep ravines to the north and south. There is no timber. A very fine hay meadow exists around the east end of Twelvemile lake. Good hay also grows in the numerous small hay marshes throughout the township. Good, fresh water was obtainable at the time of survey (July) in the marshes and sloughs and also in the south part of the township in the small spring creeks which drain the ravines and coulées. There are no water-powers. The climate is moderate with no summer frosts. There is no fuel in this township, but both wood and coal occur in the township to the south. No stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

7. The township is reached by a trail from Moosejaw which passes through township 10. The trail leads to Wood mountain and is in good condition. The soil is mostly clay loam and is well adapted for general farming. The surface is open prairie, without any timber. Sections 22, 23, 26 and 27 are mostly level and produce excellent hay. There are no springs or creeks in the township, but water could no doubt be obtained at a moderate depth by digging wells. The climate is favourable, summer frosts do not appear to prevail, while the average rainfall is light. There is no fuel supply within the township, but coal can be obtained about ten miles south, at Twelvemile lake. There are no stone quarries or minerals of economic value. Antelope were seen occasionally, but no other kind of game. With the exception of a large swamp on the northeast corner and another covering parts of sections 3 and 4, there is no waste land in this township. There are no settlers at present, but they will



## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 1—Continued.*

soon find their way into a desirable township such as this is.—*Geo. Edwards, D.L.S., 1906.*

8. The trail from Moosejaw to Wood mountain, passing through township 10, affords access to this township. This trail is in good condition. The soil is chiefly clay loam with clay subsoil, very suitable for agricultural purposes. The surface is rolling prairie without any timber. There are no hay areas of any account. As there are no springs or creeks, water can be obtained only from sloughs, or by digging wells. The average rainfall appears to be light. Other climatic conditions are favourable, and summer frosts would not be likely to prevail. There is no apparent fuel supply nearer than township 6 where coal can be obtained. There are no stone quarries or minerals of economic value. Antelope were seen frequently. Ducks frequent the sloughs in considerable numbers. There are no settlers at present, but this township will soon be occupied as it is well suited for farming purposes. There is no waste land, except a large slough covering parts of sections 26, 27, 35 and 34.—*Geo. Edwards, D.L.S., 1906.*

9. A good trail, from Moosejaw to Wood mountain, passes through township 10, range 1, and affords the most convenient means of access to this township. The soil is clay loam with clay subsoil, suitable for general farming. The surface is unbroken rolling prairie, without any timber whatever. At the time of survey (October) there was no means of determining existence or extent of hay areas, as all vegetation had been destroyed by a recent prairie fire. The only water available is in three small sloughs. There are no springs or creeks. The average rainfall is light, no summer frosts occur, while other climatic conditions are favourable. Fuel is not obtainable nearer than township 6, where coal is found. There are no stone quarries and no minerals of economic value. Antelope were seen occasionally. Ducks were the only other kind of game observed. I have rated this township third class throughout on account of it being stony.—*Geo. Edwards, D.L.S., 1906.*

10. Telegraph line trail from Moosejaw to Wood mountain passes through this township. This trail is in good condition. The soil is largely clay or clay loam suitable for agricultural purposes but stony in many places. The surface is open prairie with no timber of any kind. There are no springs or creeks, the only water being what can be obtained in a few small sloughs. Good water could, no doubt, be obtained by digging wells. A recent prairie fire destroyed all vegetation so that no hay was to be seen. Average rainfall is light, summer frosts are not usual while other climatic conditions are favourable. The nearest available fuel supply, at present, is in township 6, range 1, where coal can be obtained. There are no stone quarries, and no minerals of economic value. Antelope and a few duck were the only game noticed. This township is better adapted for grazing purposes than general farming. Owing to most of the land being stony I have rated it all as third class.—*Geo. Edwards, D.L.S., 1906.*

11. A good trail from Moosejaw to Wood mountain passes through the southeast corner of this township. The soil is mostly clay, not very good for farming but affords good pasturage. The surface is open prairie somewhat hilly in places but for the most part rolling. There is no timber. A recent prairie fire destroyed all vegetation so that no hay areas could be located. There are no springs or creeks. The average rainfall is light, summer frosts are not common, while other climatic conditions are good. The nearest apparent fuel supply is in township 6, range 1, where coal is found. There are no stone quarries and no minerals of economic value. No game was seen except



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 1—Continued.*

an occasional antelope. There are no settlers in this township. The land is suitable for grazing purposes, but too rough and stony for agricultural purposes.—*Geo. Edwards, D.L.S., 1906.*

21. This township may be reached by a graded and well travelled road from either Mortlach or Caron, stations on the main line of the Canadian Pacific railway. A number of houses forming the nucleus of a town called Brownlee lies only a couple of miles southeast of the southeast corner of this township. The soil consists of a black loam with generally a clay subsoil. The surface is an open undulating prairie without any timber or brush whatever. In a fairly dry season there are numerous small hay marshes scattered through this township, but when the seasons are very wet hay can be cut on the uplands. Water of a fair quality is found in the most of the ponds but many settlers have sunk wells. At times the water is somewhat alkaline. There are no running streams or water-powers. The climate is normal and no summer frosts were experienced. Fuel has to be imported from the nearest railway towns, Caron and Mortlach, distant twenty-three to twenty-five miles. There are no stone quarries but sufficient stone may be gathered for necessary building purposes. No minerals of economic value were observed. Game is scarce, in fact none was seen. The graded roadbed of the Moosejaw northwestern branch of the Canadian Pacific railway cuts diagonally through the southern half of this township, coming from Tuxford it also passes through Brownlee. The ironing of the grade from Tuxford is not yet completed. This township is well settled and all the homesteads occupied.—*C. F. Miles, D.L.S., 1907.*

22. This township is approached by several well beaten trails running from the small but thriving towns on the nearest railway, distant from 25 to 30 miles. The soil in the northern part of the township is sandy loam, but towards the south there is more clay. We saw several excellent crops of wheat and oats which the soil is apparently well adapted for. Vegetables also appeared to be grown with equal success. The soil is undulating to rolling, and extending across the centre of the township from the east to the northwest is the Qu'Appelle valley, averaging about a mile in width and from sixty to eighty feet deep, through which flows the Qu'Appelle river, although at the time of survey (September) it was dry in most places. The only wood in the township consists of a few clumps of small poplar and willow growing in some of the ravines, but it is not even used for firewood, as the settlers burn coal which they bring from the nearest railway stations. Hay is procured from a few dry sloughs, but principally from the bottom land in the Qu'Appelle valley. There are no lakes in this township. Drinking water is very scarce, in fact the only place we found any was in the northeast quarter of section 12, where there is a small spring. There is no flooded land, and from what we could learn no summer frosts are likely to do damage to any extent. We did not perceive any signs of lignite or seams of coal, nor were there stone quarries, but on many ridges in the northern part of the township numerous huge boulders and outcroppings of stone were quite apparent, also in various places we found considerable gravel. The nearest postoffice is Hustler, situated in township 22, range 29, fifteen miles distant from Craik, from which the mail is brought once a week. With the exception of a few antelope and numerous wild ducks we did not see any variety of game. I learned that all the land available for homesteading was taken and many new buildings are being erected. The Walsted ranch is situated in section 24 in this township, and has two hundred head of stock.—*E. W. Hubbell, D.L.S., 1906.*



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 1—Continued.*

24. This township may be reached by a good graded road from the village of Craik, a station on the Canadian Northern railway, Craik being about seventy-two miles from Regina. The soil generally is a black loam, varying in depth from four to twelve inches, four inches predominating, underlaid mostly by a sandy clay. The surface is an undulating and gently rolling, open prairie without any timber or brush whatever. There are a number of marshes scattered over the township, which in ordinary dry seasons are available for making hay. The only water to be found is in ponds, although the settlers now have wells, the water in some instances being slightly impregnated with alkali. There are no running streams and no water-powers. The climate is normal and summer frosts not general. There being no timber, coal has to be procured from Craik, or wood from the sand hills about ten miles to the west. There are no stone quarries, although stones or boulders may be found in sufficient quantities for local building purposes. No minerals were observed. Game is scarce, although an occasional antelope is still to be seen. This township is pretty well settled, and no more homesteads are available.—*C. F. Miles, D.L.S., 1907.*

33. The southwest corner of the township is hilly, the remainder of the south half varies from rolling to hilly and the north half is hilly. It is all open prairie. The surface is broken by sloughs and lakes, the water in nearly all of which is more or less alkaline. The lake in section 7 has banks from ten to twenty feet high, sand and gravel shore, sand bottom and fresh water. A creek from the hills to the south runs into this lake; it was dry however at the time of survey (August). Of the five lakes traversed this is the only one containing fresh water. The lake in sections 1 and 12 has a large slough or marsh, on the west side extending with many crooks nearly across the south half of section 11. The lake in section 14 has a slough on the west side of it extending into section 15. A large swamp covers a part of sections 8, 9, 16, 17 and 18. At a short distance it appears to be one mass of reeds, but there is a considerable area of open water in it. The reeds afford cover for ducks and other water fowl which gather there in great numbers. The water is shallow but as it lies in a depression there is apparently no easy way of draining it. A quantity of hay can be cut around many of the sloughs and in many places on the upland. The soil is good clay or clay loam and produces good crops. I think that for farming this is the best of the four townships surveyed in this district. The main line of the Grand Trunk Pacific railway cuts the north half of section 36. Nearly all homesteads have been taken up and a large area is under crop considering the short time since settlement started in the township. The close proximity to the main line of the Grand Trunk Pacific railway has increased the value of the land and added much to the prospects of the settlers.—*Wm. R. Reilly, D.L.S., 1906.*

34. This township is very much like those to the south and west of it. It is rolling prairie with many sloughs in which the water is more or less alkaline. A lake was traversed in sections 27 and 28. It has a soft clay shore, and the water is strongly alkaline. The soil is mostly a rich clay loam, with a clay subsoil. It produces excellent grain and other crops. Hay is not found in large areas, but nearly all the sloughs produce some, and on a number of the upland flats a large quantity was cut this year. The season was a very favourable one for farming, there being frequent showers in the early part of the season. Some extra heavy thunder storms occurred in July, but crops were not damaged to any great extent. The settlement is new but excellent progress has been made in breaking up the land. A number of first class dwellings were built this season and in many ways the district has the appearance of a much older settled country. The main line of the Grand Trunk Pacific railway



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 1—Continued.*

cuts the township diagonally from the southwest corner of section 1 to the northwest corner of section 18. This has increased the value of the land and added much to the prospects of the settler.—*Wm. R. Reilly, D.L.S., 1906.*

35. The soil of this township is generally sandy loam with a clay subsoil, suitable for the production of wheat, barley, flax, oats and vegetables. The surface is mostly undulating, being more rolling towards the northern part, and is destitute of timber or bush of any description. There is scarcely any hay except that obtained from the large marshes in sections 2, 9, 10, 16 and 20. The settlers content themselves with prairie grass or 'wool top.' Most of the water obtained from wells, which are 20 to 50 feet deep, has an alkaline flavour. However as there are several comparatively large bodies of fresh water throughout the township, the supply is permanent and more than sufficient. As far as we could ascertain the land is not liable to be flooded and summer frosts are of rare occurrence. The settlers, generally, use coal for fuel, hauling it from Davidson or Saskatoon, from thirty to thirty-five miles distant. Some wood is procured from the hills to the northeast about twenty miles distant, but as this section of the country is being rapidly homesteaded, the supply obtained from this district will naturally cease. We did not observe any indications of lignite veins, coal, minerals nor stone in sufficient amounts for quarrying. The only game is of the feathered variety and these were quite plentiful this year, except prairie chickens. This township is well settled and a considerable portion is under cultivation. The Canadian Pacific railway runs across sections 12, 11, 10, 9, 8, 17 and 18. As yet it is only graded but the rails are expected to be laid very soon. The town of Elstow, situated in sections 3 and 10, is making fair progress and doubtless in a short time will be a town of importance, as it is surrounded by a splendid agricultural country, and it is about the right distance from Saskatoon.—*E. W. Hubbell, D.L.S., 1907.*

37. This township is open prairie, very hilly on the south and west sides, rolling to hilly on the north and east sides and depressed in the interior. It is very much broken by lakes and sloughs in which the water is mostly fresh. The soil in all parts of the township is good. It is mostly a rich sand or clay loam. Hay cannot be said to be plentiful for a township that has so many sloughs. A large amount can be cut around sloughs and on the low ground but no great quantity in any one place. A large fresh water swamp stretches nearly across section 26. It is very much like the swamp in township 33, range 1. A heavy growth of reeds covers almost the whole area. There are only a small number of homesteads in this township that will make good grain farms. The greater portion, being either hilly or broken by water areas, is not a desirable location for the majority of settlers whose chief aim appears to be grain growing. This ground supports a good growth of grass and, with abundance of fresh water, makes a splendid grazing country. All the good homesteads have been taken up and considerable improvements made on some of them. This season with abundance of rain and little damage by frost or hail was a favourable one for farming. A ravine on the north side of section 35 has a little scrub in it, the only wood in the township.—*Wm. R. Reilly, D.L.S., 1906.*

38. The surface is open prairie, flat in sections 31, 32, 33, 34, 35 and 36, but gradually becoming rolling or hilly in the next tier of sections, while from the south it is all rolling or hilly, and stony on many of the side slopes and ridges. The soil is mostly a rich clay loam on a clay subsoil. The soil of the sections on the north side of the township is first class. Some quarter sections scattered over the township will make good farms, but the greater part is rather too rough or too stony for cultivation. A number of sloughs and lakes are dotted all over the townships,



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 1—Continued.*

the water in the majority of them is fresh. Eight water areas were traversed. A pumping station on the side of lake No. 6 in section 33 supplies the water tank on the Canadian Northern railway at Vonda. All the desirable homesteads have been entered for, and most of them well improved. Owing to the short distance from the railway many of the poorer homesteads will be taken by those who will not go far from the railway to settle. A ravine in section 21 has a quantity of poplar and willow scrub in it. The lake in sections 14 and 23 is fringed with poplar and willow scrub, except the north side which is bare. Scattered clumps of poplar are dotted over sections 10, 11, 12, 13, 14, 15, 23 and 24. The season was a very favourable one for farming, sufficient rain, very little frost and very fair harvest weather.—*Wm. R. Reilly, D.L.S., 1906.*

52. There is a road from Prince Albert to the Sturgeon Lake Lumber Company's mill, whose buildings are on sections 22 and 27 of this township. The road is in fairly good condition. The surface of the township is timbered with poplar and spruce. The better spruce is cut, but there is still some small 12-inch spruce in the vicinity of Big Belly lake. There is no hay to speak of in this township. The water is fresh and the supply is sufficient and permanent. There is no land liable to be flooded. There is no water-power. The fuel is poplar and dry spruce and can be procured in almost any part of the township. There is no coal or lignite, stone quarries or minerals of any kind. There are a few moose, deer, bear, foxes, lynx and numerous muskrats. Partridges are scarce but duck plentiful. Bell lake, north of this township, is locally known as Shoal lake. It is a shallow, soft bottom lake, whose shores are bordered with swamp grass and brushes.—*A. L. McLennan, D.L.S., 1907.*

*Range 2.*

4. This township was reached from township 4, range 1, by following the police trail along the government telegraph line from Willowbunch to Wood mountain. It was in good condition. The soil is of poor quality, being gravelly and stony in many places and is suited only for grazing purposes. The surface is chiefly rough and broken prairie with no timber except small scrub poplar and willow on the north slopes of many of the ravines. Good fresh water was readily found in marshes and sloughs at the time of survey (August) and also in the creek which crosses sections 19, 20, 21, 27 and 34 on its way to Twelvemile lake. The land is not liable to be flooded. No water-powers occur. The climate is moderate, with no frost at the time of survey. Firewood is plentiful in the ravines and small seams of coal are readily found by the ranchers a few feet below the surface. It is lignite of low calorific value, but burns in an ordinary cook-stove. No stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

5. This township was reached from township 4, range 1, by following the police trail along the government telegraph line. It was in good condition. The soil is light with a considerable amount of sand and gravel and on account of the uneven surface is suitable only for grazing. The surface is everywhere hilly and broken prairie, with no timber. Hay is plentiful in the numerous small hay marshes throughout the township. Good fresh water was to be found in the sloughs and marshes at the time of survey (August) and also in the creek which enters the township from the south in section 3, and flows north into Twelvemile lake. It averages ten links wide, one foot deep and was flowing very sluggishly at the time of survey. The land is not liable to be flooded and no water-powers occur. The climate is moderate, with



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 2—Continued.*

no frosts. Deadwood is to be found in the township to the south, and the ranchers state that lignite coal exists in many of the hills in the township. It is the characteristic low grade variety of the district. No stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

5, 6, 7 and 8. (*Boundaries*).—Township 5 is exceedingly rough and altogether unfit for agricultural purposes. There are numerous springs of good water and general conditions are favourable for ranching purposes. The southern part of township 6 is rough and hilly. It is traversed by Twelvemile lake, the water of which is alkaline. This township affords favourable conditions for ranching, but a large part of it is too rough for cultivation. Coal is found in this township on the south side of Twelvemile lake. Township 7 is well adapted for agriculture, there being very little waste land. There are no streams or springs, but water could doubtless be obtained by digging wells. There are no settlers here at present. Township 8 has a gently undulating surface, and would make good farming land. There are no springs or creeks, but water could doubtless be obtained by digging wells.—*Geo. Edwards, D.L.S., 1906.*

7. This township was reached from township 11, range 10, by following the old trail eastward to the provincial government bridge across Wood river in township 11, range 4. The trail was in good condition. The soil in the northeast, one-third of the township, is of fine quality and is good farming land. The soil in the remainder of the township is lighter and better suited for grazing purposes. The surface is prairie throughout. The northeast one-third of the township is gently rolling, while the remainder is more rolling and hilly. No timber occurs. Hay is plentiful in the numerous hay marshes throughout the township. Good fresh water was plentiful at the time of survey (October) in the small sloughs and marshes in the township, and settlers were able to find water by digging twelve feet. No water-powers occur. The climate is moderate, with slight frosts at the time of survey. No fuel, stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

8. This township was reached from township 7, range 2, by following the telegraph line trail. It is in good condition. The soil is of excellent quality and well suited for agricultural purposes. The surface is level and gently rolling prairie with no timber. A small amount of hay is found in the hay marshes. Fresh water was scarce at the time of survey (October), and was to be found only in the small marshes. No creeks nor water-powers occur. The climate is moderate, with frosts at the time of survey. No fuel, stone quarries nor minerals were found. Antelope was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

9. This township was reached from township 8, range 2, by following the telegraph line trail northward. It was in good condition. The soil of the west three-quarters of the township is of good quality, while the remainder is lighter, but the whole is suited for agricultural purposes. The surface is level and rolling prairie with no timber. A little hay is found in the few scattered hay marshes. Water was very scarce at the time of survey (October), and was only to be had in a few scattered marshes. No creeks nor water-powers occur. The climate is moderate with frosty nights at the time of survey. No fuel, stone quarries nor minerals were found. Antelope was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

10. This township was reached from township 9, range 2, by following the telegraph line trail northward. It was in excellent condition. The soil is of good quality. There is a good deal of gumbo in the township which is very stiff to break, but otherwise it is



## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 2—Continued.*

good agricultural land. The surface is gently rolling prairie with no timber. Hay is plentiful, occurring in the numerous small hay marshes, and also around the large marsh situated in sections 35 and 36. Water was scarce at the time of survey (October), but was obtained in a few of the marshes. No creeks nor water-powers occur. The climate is moderate with slight frosts at the time of survey. No fuel, stone quarries nor minerals were found. Game consists of duck and antelope.—*J. L. R. Parsons, D.L.S., 1907.*

11. This township was reached from township 5, range 3, by following the old Wood mountain trail, northerly, through range 3 to township 10. It was in good condition. The soil is of fair quality and suited for agricultural purposes. The surface is rolling prairie with no timber. Hay is plentiful in the numerous small hay marshes throughout the township, and in the large hay marsh which occupies the south half of sections 1 and 2. At the time of survey (August) water was scarce, but obtainable in a few marshes. No creeks nor water-powers occur. The climate at the time of survey was moderate with no frosts. No fuel, stone quarries nor minerals were found. Game consists of antelope and duck.—*J. L. R. Parsons, D.L.S., 1907.*

12. This township was reached from township 11, range 2. The soil is of fair quality, supporting a good growth of grass and is suited for agricultural purposes. The surface is rolling prairie with no timber. Good hay is to be found in the small hay marshes through the township. Water was scarce at the time of survey (August) and was to be found only in the deeper marshes, which had not dried out. There are no creeks and no water-powers. The climate is moderate with no frosts. No fuel, stone quarries nor minerals were found. The only game was antelope and duck.—*J. L. R. Parsons, D.L.S., 1907.*

21. This township is approached by several well beaten trails from the east and south connecting with the main trails running to the different towns which are situated on the various railway lines, twenty to twenty-five miles distant. The soil is generally sandy clay, suitable for growing wheat, barley, oats and vegetables, of which I saw several excellent crops. The surface is generally undulating, and in a few places rolling prairie. There are a few isolated hills situated in sections 26, ~~32~~, 33 and 18. The one in section 26 is known as Eyebrow hill from its peculiar shape, and is about seventy feet high. There is very little water. A small spring in section 27 was the only one noticed; the creeks and sloughs being all dry at the time of survey (September). However the settlers in this township have numerous wells from which a supply of excellent water is obtained. There is no timber or bush of any description in this township, so that the settlers have to burn coal which is obtained at the nearest railway stations. A small amount of hay is obtained from the bottom lands and a few of the dry sloughs, but the supply is limited. There are no lakes or sloughs and from what I could learn, there are no summer frosts that do any material injury. We did not perceive any signs of lignite or coal seams. The nearest postoffice is Hustler, situated in township 22, range 29, west of 2nd meridian, to which the mail is brought once a week from Craik, fifteen miles distant. We did not notice any stone quarries, but observed many boulders scattered on the hill tops. The proposed route of the extension of the Canadian Pacific railway from Moosejaw to the Elbow runs across the northern part of this township and when finished will be a great boon to the numerous settlers in this vicinity, especially as they are forming a village in this township.—*E. W. Hubbell, D.L.S., 1906.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 2—Continued.*

22. This township can be reached by several well travelled trails from towns situated on the nearest railways and distant thirty-five to forty miles. The soil is generally sandy clay intermixed occasionally with a little gravel. We came across several excellent crops of grain, principally wheat; thirty-eight bushels to the acre was threshed off about eighty acres, on the northeast quarter of section 10. The surface is generally undulating to rolling but is slightly hilly in the west half of the township. There are two springs in this township, situated in sections 1 and 16 respectively and the water is fresh and sweet although in very hot weather the supply is limited. Water is also obtainable from Eye lake in sections 2, 3, 10 and 11, also from a lake in the east half of section 5. Otherwise the country is rather dry. There is no wood of any description except a little poplar in the east half of section 36, which has been culled over and over again. The settlers burn coal, although some obtain a little wood from the sand hills to the north. Hay is very scarce, a limited amount being obtained from a few dry marshes. Wool top and straw are generally used by the settlers as fodder for their stock. There is no flooded land and I believe no summer frosts that do any material damage. No sign of lignite veins or coal were noticed nor are there stone quarries. There are several trails passing through this township; one of them is the old and well travelled trail to Saskatoon, which is, however, gradually getting ploughed up in places. The nearest postoffice is Hustler, situated in township 22, range 29, and distant fifteen miles from the town of Craik, from which place the mail is delivered once a week. The original survey was fairly well done, except for a few miles which had to be entirely resurveyed and the old mounds of which had to be destroyed. All the homesteads are taken up and improvements were noticed on nearly all of them, as well as upon the odd numbered sections. This is a well settled and apparently a prosperous agricultural district.—*E. W. Hubbell, D.L.S., 1906*

23. That portion of this township lying south of Qu'Appelle river can be easily reached from projected stations on the new Moosejaw Northwestern branch of the Canadian Pacific railway, which, although graded, had not been ironed at the time of survey. That part lying to the north of the Qu'Appelle valley may be reached by fair roads from Craik, a station on the Canadian Northern railway. In the greater part of this township the soil consists of light and sandy loam with sometimes a clay subsoil. The sections however in the northeast and southwest corners are of a black loam suitable for raising any indigenous crops. The surface in the northeast and southwest corners is somewhat rolling but a good deal broken in the central parts from the northwest to the southeast corners. It is all open prairie except in the valley of the Qu'Appelle, where it is somewhat scrubby. There is no timber. There are but few hay marshes, the hay having to be procured from the uplands. There is plenty of water, but not of very good quality, except in wells sunk by some of the settlers. There is no current in the river nor in Eyebrow lake, nor are there any water-powers. Fuel has to be brought from the sand hills to the northwest or from the nearest railway stations. No stone quarries or minerals were observed. The best lands in the township, I believe, have already been taken up, although not all occupied.—*C. F. Miles, D.L.S., 1907.*

24. This township may be reached by a graded road from the village of Craik, a station on the Canadian Northern railway distant from Regina about seventy-two miles by rail. There are several elevators here and a daily train service. Some of the settlers in the westerly portion of this township trade at Girvin, and others at Davidson, both villages on the same line of railway. The soil in the easterly portions is generally a black loam with a clay subsoil, whereas the westerly smaller part is more



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 2—Continued.*

of a sandy nature, with nearly a pure sand in some of the westerly tier of sections. The surface is undulating and open prairie, except the southwesterly quarter which is partly covered with a dense growth of scrub and brush—being a part of the sand hills extending in here from the west. It is a comparatively dry township. The hay is got from the uplands or dry beds of marshes. The water in the ponds is frequently alkaline, but many settlers now have sunk wells from which they draw their supply of water. There is a lake on sections 8 and 17, from which there is a flow at times of high water. There are no water-powers in the township. The climate is normal and no summer frosts were experienced, in fact settlers maintained that no summer frosts had occurred since they settled there. There is some timber in the sand hills to the west, from which much of the fuel supply is procured, but in course of time it will have to be imported from the nearest railway stations. All the poles that have been used for building purposes have also been drawn from the adjacent township. There are no stone quarries, but sufficient stone may be gathered for local building purposes. No minerals were observed. Antelope and deer are still to be found in the hills, and put in an occasional appearance. Prairie chickens appeared still to abound in the brushy parts after the cold weather set in. This township is well settled and the homesteads in the open parts are all occupied.—*C. F. Miles, D.L.S., 1907.*

33. The southeast quarter of the township is from rolling to hilly prairie, most of the hills and ridges and many other parts being stony. The soil is good clay loam, but on account of broken surface and stones, the greater portion of this part of the township is best adapted for grazing. The southwest quarter and the north half of the township are rolling prairie. The soil is mostly a good clay loam running into sand loam at the northwest part of the township. Sloughs are found all over the township with water more or less alkaline in all of them. No extensive hay meadows exist, but hay in small quantities can be cut around nearly all sloughs and in many places on the upland. A traverse was made of four water areas and the water in all of them was found to be strongly alkaline. With the exception of the southeast part, this is a good township for farming. The homesteads are nearly all taken up and good progress has been made in developing them. The building of the Grand Trunk Pacific railway has increased the value of land and added much to the prospects of the community. The season was a very good one for farming. There was sufficient rain and little damage by frost or hail in this township.—*Wm. R. Reilly, D.L.S., 1906.*

34. This township varies from rolling to hilly prairie, there being very little level land. There is no wood of any kind. There are patches of alkali land in the majority of the sections, the largest stretches being in the north part of sections 31, 32 and 33. This township is dotted all over with sloughs containing water more or less alkaline. One lake was traversed in sections 15 and 16, and one in sections 7 and 18. The water in the former is slightly alkaline, and in the latter it is so strongly alkaline that stock will not drink it. The soil is generally a good clay loam, but is somewhat alkaline in the lowlands. It produces first class grain and other crops. Hay is not plentiful, but a considerable quantity can be cut in many places. Settlement started in this township less than four years ago, but it has many appearances of an old settled district. A large amount of improvements has been done this season. The season was an excellent one for farming, there being an abundance of rain, little or no damaging frost, and very slight damage on account of hail. The survey of the main line of the Grand Trunk Pacific railway cuts the township from sections 13 to



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 2—Continued.*

31. The advent of this road has greatly advanced the price of land and added fresh impetus to the settlers. A very prominent hill which can be seen for many miles is on the southeast quarter of section 16.—*Wm. R. Reilly, D.L.S., 1906.*

38. The surface is from rolling to hilly prairie. The township is cut diagonally by a range of hills from sections 6 to 36. The southeast portion is hilly with many sloughs containing mostly fresh water. The greater part of this portion of the township is stony, sections 2, 3, 4, 5, 9 and 10 being very stony. A flat at the foot of the hills has a succession of sloughs from sections 7 to 35. The ground gradually rises westward from the flat. The northwest part is all rolling. The soil is mostly a rich clay loam with clay subsoil. The northwest part is splendid farming land. Some quarter sections south of the flat and along the east side of the township are very good, but the greater part of the south of the township is unfit for cultivation. Small quantities of hay, can be cut in many places, but no large amount in any one place. The original plan shows an old cart trail, crossing the township. This has been ploughed up in many places and is nearly blotted out. The township has farm trails in all directions but as they are of no importance they were not noted. The main line of the Canadian Northern railway curves a short distance into sections 33, 34 and 35. The climate was favourable for all classes of farming with frequent rains through June and July, little or no summer frost and very good harvest weather.—*Wm. R. Reilly, D.L.S., 1906.*

52. The surveyed trail to Montreal lake passes within a few miles of the Sturgeon Lake Lumber company's mill, which is in section 22 of the township immediately east; the trail to the mill is good but the bush road from the mill is not in good condition. The nature of the soil would permit of good mixed farming. The surface is slightly rolling, covered with poplar and thick hazel. The north shore of Von Mehern lake is bordered with first class spruce from six to thirty inches in thickness. There is a small quantity of hay on the south shore of Von Mehern lake and also on the shore of Cox lake; the quality is coarse. There is a sufficient and permanent supply of fresh water. Some of the smaller sloughs are slightly alkaline. The streams are small and not liable to flood the adjacent land to any appreciable extent. The climate for this summer was exceptionally wet and very cool. We had ice during the months of June, July, August, September, October, November and December. Poplar for fuel is most readily available and can be procured in any part of the township. There are no stone quarries, or minerals of any kind. Red deer, cotton tail, bear and partridges exist but are very scarce; muskrat, foxes and lynx are more numerous, also innumerable black ducks.—*A. L. MacLennan, D.L.S., 1907.*

*Range 3.*

5. This township was reached from township 5, range 2, by travelling westward along the 2nd base line. The soil is of good quality and the greater part of the township is suited for agricultural purposes. The surface is level or rolling prairie except along the east branch of Wood river, where it is rough and broken. No timber occurs. Good hay is found in the small hay marshes and in the valley of the east branch. Fresh water was obtainable at the time of survey (August) in the small sloughs and marshes, also in the east branch of Wood river which crosses sections 4, 9, 16, 15, 22, 27 and 33, in its northerly course; it averages eight links wide, one foot deep, and has a current of one mile per hour. No water-powers occur. The climate is moderate with no frosts. There is no fuel in the township but wood and coal are both obtain-



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 3—Continued.*

able in the township to the south. No stone quarries nor minerals were found. Duck was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

11. This township was reached from township 12, range 2, by following the settler's trail westward to township 11, ranges 4 and 5. It was in good condition. The soil is of fair quality and adapted for agricultural purposes. The surface is level and rolling prairie except the easter'y tier of sections which are hilly prairie. There is no timber. Hay is scarce in this township. A small amount is found in the small hay marshes in the north part of the township. Water is not plentiful but at the time of survey (September) was obtainable in small marshes in the north part of the township. No creeks nor water-powers occur. The climate is moderate with no frosts. No fuel, stone quarries nor minerals were found. Antelope was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

12. This township was reached from township 11, range 2, by following the old Qu'Appelle trail westerly. It was in good condition. The soil is of good quality, but on account of the hills the land is suitable for grazing purposes only. The surface is rolling and hilly prairie with no timber. A little hay is to be found in the small hay marshes scattered through the township. Water was to be had at the time of survey (September), in the small sloughs and marshes. There are no creeks and no water-powers. The climate is moderate with no frosts at the time of the survey. No fuel, stone quarries no minerals were found. The only game was antelope.—*J. L. R. Parsons, D.L.S., 1907.*

51. This township was reached by the Sturgeon lake trail from Prince Albert. When we went out part of the trail was very wet so that we had great difficulty in getting to our township, but later on the trail was dried up, so that it was fair for travelling on. This township we found to be a very difficult one to survey as the entire surface is covered with timber and scrub. It was also very wet so that we could make little progress in our work, owing to the thickness of the undergrowth and the numerous ponds and lakes. There are ten large lakes which we traversed, two of which are over two miles long. The water in these lakes is fairly good, there being only a little alkali in them. The soil is generally good, being clay or clay loam, which if brought under cultivation would make good farming land, but, though there would be some trouble in clearing it up, it would repay. There is not much timber that would be of commercial value but it would be suitable for small buildings. There is a fair sized stream but it has no water-powers on it. The climate is fair, but at present owing to the dense growth of wood, &c., it would seem to be subject to frosts that would be injurious to crops. Yet if cleared up the frosts might not exist. There is plenty of fuel in the timber now growing, but there are no indications of coal or any mineral of any kind. There are some deer, and other kinds of game, but not very numerous. Taking the township as a whole there are a good many desirable sections for settlement.—*James Warren, D.L.S., 1907.*

*Range 4.*

1. There is a trail from Moosejaw running south of Johnston lake leaving the Wood mountain trail at the east end of the lake and crossing the east boundary of section 24. There is also a trail from Mortlach which runs to a squatter's house on section 4, township 12, range 4. The soil is clay or clay loam and suitable for farming. The land along the creek is broken and scrubby and more adapted for stock raising and mixed farming. The remainder of the township is a level or gently rolling prairie. There are no timber and no hay sloughs but there is considerable



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 4—Continued.*

good prairie hay. The streams are the only permanent water supply of the township, the largest being Wood river. It is from fifteen to sixty feet wide but the current is sluggish, and during the fall and winter it is practically dry except for standing water. Power could be developed only for a small portion of the year. There were no summer frosts up to the time of completion of survey (July.) There is a little wood along the streams but there are no lignite or coal veins in the township. There are no stone quarries or minerals of economic value known. There are ducks and chicken along the creek and a few deer along the streams in sections 22 and 27. —*Chas. M. Teasdale, D.L.S., 1907.*

12. This township was reached from township 12, range 3, by following the old Qu'Appelle trail westerly. The soil is of good quality and is excellent agricultural land. The surface is rolling prairie with no timber. Hay is scarce in this township. A little is to be had where the valley of Wood river widens out. Good fresh water is to be found in the river. The junction of the south and middle forks occurs in township 11, range 4, and the river flows northward in township 12 through sections 2, 3, 9, 10, 15, 16, 22, 27, 28, 29 and 32. It is joined in section 32 by the north branch in which however there was no water at the time of survey (September.) This stream averages twenty-five links wide, three feet deep and has a current of one and one-half miles per hour. No water-powers occur. The climate is moderate with slight frosts at the time of survey. Fire wood sufficient for the needs of the settlers for several years is to be found along the river. No stone quarries nor minerals were found. Antelope and duck were the only game seen. —*J. L. R. Parsons, D.L.S., 1907.*

50. This township was reached by a trail cut through woods from township 51, range 3, which was very rough and difficult to make. This township is largely timbered with jackpine, spruce and young poplar. The soil is chiefly sandy and there is very little soil that would be adapted for farming purposes except some locations in the south and northeasterly portions of the township. There are some patches of poplar, but none of any commercial value. The jackpine timber would make ties for railway purposes but the supply is limited. In the centre of the township there is a large muskeg which breaks up the township very much. At the southwesterly part of the township Shell river comes in. This is a large stream about fifty links wide, used at times for floating logs by the lumbermen. There is plenty of fuel all through, the township being covered with timber, but there are no indications of coal or any other mineral, nor is there any fixed rock in any part of the township. Game is scarce, there being only an occasional deer to be seen. The only meadow for grass is in sections 36 and 25, but only in a limited quantity.—*James Warren, D.L.S., 1907.*

51. This township was reached by a trail cut through township 51, range 3, which connected with the Sturgeon lake trail. There was a good deal of difficulty in getting to this township owing to many wet and soft places. There is a good deal of good land in parts of the township especially in the eastern portion. It would be well adapted for farming purposes, but would require the clearing away of the timber, scrub, &c., as the whole surface is covered with woods, there being no prairie or opening of any kind. There is a good deal of very fine timber in the western portions of the township, chiefly spruce and poplar, which are of commercial value. There are no hay marshes, as where there are any openings it is covered with water. The water is good, there being little or no alkali in it. There is a stream running southeasterly through the northerly portion of the township, which is a nice sized



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 4—Continued.*

stream, but it has no water-powers on it as the current is not strong. It has some hay flats along parts of it. There is plenty of fuel all over the township, there being an abundant supply of timber or wood. There are no indications of coal or any mineral of any kind, nor is there any fixed rock exposed anywhere. There are a few ducks on the ponds or lakes, but not very many. This township would be well adapted for farming purposes. Of course there would have to be a good deal of labour expended before the land would be in a state fit for cultivation. At present the township would be liable to frosts, but I think that would be less if the land were cleared up.--*James Warren, D.L.S., 1907.*

*Range 5.*

10. This township is reached from Moosejaw by following the Wood mountain trail to township 10, range 1, and then following a trail which runs west along the north boundary of township 10, range 4. The soil is a clay or clay loam and suitable for farming except in sections 3, 4, 5, 6, 7, 8, 9, 18 and 17, which are rolling and have considerable stone on them. These sections are best adapted for grazing. The surface is all prairie with no timber except some small maple all along Wood river creek. The prairie is covered with a heavy growth of grass suitable for hay. Water is very scarce except in the river. The water in the lake in section 16 is alkaline but the water in the lake on section 36 is fresh. At the time of survey (June) the river was from ten to fifteen feet deep and had a strong current, but it became partly dry later in the season. This river is not suitable for water-power as the water does not run all year. There were no summer frosts. There is a little wood along Wood river and coal can be procured at Wood mountain. There are no stone quarries, and no minerals of economic value. Game is not very plentiful but there are a few chickens and ducks along the river and a few antelope in the hilly portion to the southwest of the township.—*Chas. M. Teasdale, D.L.S., 1907.*

11. This township is reached from Moosejaw or Mortlach. The trail from Moosejaw runs north of Johnston lake, and is known as the Fort Walsh trail. The soil is a clay or clay loam, well adapted for farming. The surface is all prairie except a little maple and willow bush along the river. There is no timber. Hay is not plentiful, but there is some on the flats on sections 34, 35 and 26. At the time of survey (August) there was no water in the township except in the river and in a long slough in the valley. The stream is from ten to twenty feet wide and contains fresh water. There is very little current, and, as it is practically dry during the fall and winter, it is not suitable for water-power. There were no frosts during the survey. Some deadwood can be had along the river, but not in large quantities. There are no coal or lignite veins, no stone quarries and no minerals of economic value found in the township. Duck and chickens are quite plentiful along the river and a few antelope are found in the west part of the township.—*Chas. M. Teasdale, D.L.S., 1907.*

12. This township was reached from township 12, range 4, by travelling west. The soil is good and suited for agricultural purposes. The surface is rolling prairie with no timber. Hay is not plentiful, but a limited supply is to be had in the small hay marshes and flats along the two branches of Wood river. Good water is to be had in the little branch, Notukeu creek. The north branch, Wiwa creek, was dry at the time of survey, September. Notukeu creek crosses sections 7, 8, 9, 10 and 3, while Wiwa creek crosses sections 31, 32, 33, 34, 35 and 36. No water-powers occur.



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 5—Continued.*

The climate is moderate. A limited amount of firewood is to be found along the river. No stone quarries nor minerals were found. Game consists of antelope and duck.—*J. L. R. Parsons, D.L.S., 1907.*

*Range 6.*

11. This township was reached from township 6, range 12, by travelling south. The soil is of light quality and is only fair agricultural land. The surface is level and rolling prairie except the three southwest sections, which are hilly. There is no timber. A fine hay marsh occupies the south half of sections 14, 15, 16 and 17, and the north half of sections 8, 9, 10 and 11, affording abundance of good hay. This hay was cut this year by settlers or ranchers. Water is very scarce and at the time of survey (September) it was possible to obtain it only by digging in the centre of hay marshes and dry slough bottoms. No creeks nor water-powers occur. The climate is moderate with light frosts. No fuel, stone quarries nor minerals were found. Antelope was the only game seen.—*J. L. R. Parsons, D.L.S., 1907.*

12. The north half of this township is poor soil, while the south half is fair and suited for agricultural purposes. The surface is rolling prairie with no timber. Hay is not plentiful, but a little is to be found along the banks of Notukeu creek. Good water is to be found in this creek, which crosses sections 18, 17, 16, 15, 9, 10, 11 and 12. It averages twenty-five links wide, two feet deep and has a current of one and one-half miles per hour. No water-powers occur. The climate is moderate with slight frosts. A little fuel is found along the creek. No stone quarries nor minerals were found. Game consists of antelope and duck.—*J. L. R. Parsons, D.L.S., 1907.*

34. This is a rough broken township. South Saskatchewan river enters the township in section 2. It flows northward through wide undulating flats, in a channel with sharp cutbanks twenty to thirty feet above low water. It cuts sections 2, 11, 10, 15, 14, 23, 22, 27, 28 and 33. A large and a small island is formed by two channels of the river in sections 27 and 28. The large island is covered with a heavy growth of poplar, willow, ash and alder scrub. The south channel has the widest and deepest stream. A small wooded island is formed near the left bank on section 2. At the medium height of water a long narrow island is formed along the right bank in section 2 by a narrow stream that branches off the main stream about a quarter of a mile above the south boundary of the township. This stream will be dry in low water. The lower portion of the island is covered with a thick growth of small willow, the remainder with heavy poplar and willow scrub. A long narrow crooked body of fresh water known as Pike lake, covers a portion of sections 9, 4, 5, 8, 17, 16 and 21. It seems to be well stocked with fish principally pike. The west shore through sections 5 and 8 and the east shore through section 8 is well defined with good banks. The remainder of the shore line is low and flat. A small creek runs into the lake on the east side of section 5 and one out of the south and through sections 9, 16, 21, 29 and into the river in the southeast corner of section 32. These creeks are dry during the summer.

Browns lake, a shallow body of fresh water, cuts the corners of section 32 and 33. It is muskeggy on the west and north sides. From section 17 a muskeg and marsh extend across sections 20, 29 and 32. A large quantity of hay can be cut in the marsh on sections 29 and 32. The river valley is skirted on the east by a range of hills sloping to the river and outlined, roughly speaking, by a crooked course from the northeast corner of section 1 through 12, the west half of 13, the southwest corner



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 6—Continued.*

of 24, skirting the river closely through 23 and 26 and into the centre of 27, thence northeasterly through 27 and the west half of 35. The valley is marked on the west side by a range of similar hills, whose outline is near the centre of sections 5, 8, 17, 20, 29 and 32. The hills on both sides of the valley are mostly light sandy soil, third or fourth class and fit only for grazing purposes. The western hills are thickly dotted with poplar bluffs with timber four inches to eight inches in diameter. The eastern hills are nearly bare, having only odd clumps of brush or light poplar bluffs. The greater part of the valley is covered with poplar bluffs and heavy underbrush of willow, poplar, alder, ash, cherry and hazel with intervening prairie openings. A large portion of the poplar is large enough for building purposes, fencing, etc. Only a small portion of the willow is large or straight enough for fence posts. There are some scattered cottonwood trees twelve to twenty inches in diameter along the river in sections 2 and 11. The largest quantity of timber is on the flats in sections 27, 28, 33 and 34. A great quantity of firewood can be taken off these flats. On the west side of the river nearly all the homesteads in the valley are taken, and some settlers have made good improvements. The soil of this part of the valley is mostly a rich clay loam. An Indian reserve in the southeast corner of the township covers the most of the good land on the east side of the river. A trail from Saskatoon to the Indian reserve runs along the east side of sections 25 and 24 and through 13 into the reserve. An old trail on the west side of the river passes nearly due south through sections 32, 29, 20, 17, 8 and 5. Some very strong springs flow out at the foot of the hills in section 32. Indications are that enough water could be got here to supply a large town. No stone quarries or minerals of economic value were found. No water-power exists except what might be developed on the river. Game was scarce. Some badgers, rabbits, coyotes, grouse and prairie chicken were seen, also some marks of deer but none were seen.—*Wm. R. Reilly, D.L.S., 1907.*

**35.** The surface, soil and general appearance of this township vary very much. The southeast and northeast corners are broken by the south branch of Saskatchewan river. The eastern part is rather flat, being valley land, the western part rolling to hilly. The division is marked by a range of hills skirting the flat from the southeast corner of section 35. An old trail follows the brow of these hills. It is the summer road of the settlers in the valley up the river. They make a winter road in the flats below. Moon lake in the flats is a shallow body of fresh water cutting sections 10, 14, 15, 16, 21, 22 and 23. It has low marshy shores with reeds on the greater part of its border, extending far out into the water. It can be easily drained into the river. A large portion of the southeast quarter of the township and sections 22, 23, 24, 25 and 36 are covered with a heavy growth of red willow, poplar and balm of Gilead. Some of the willow is large enough for fence posts. The poplar and balm of Gilead can be used for fuel and rough buildings. The remainder of the township is dotted more or less with clumps of poplar and willow brush, which will supply fuel and fencing, but very little building material. The soil of the flats is mostly good clay loam. The upland in the northwest quarter of the township is good sand loam. There is light sand in the southwest corner of the township and on sections 1, 2, 3 and 4. This part of the township is of little use for farming purposes but will make good grazing land. The greater number of the homesteads have been taken up, and good progress made in many cases. Hay is not plentiful but a limited quantity can be cut in many places on both low and high ground. The soil, character of the ground and shelter for stock, make the district more suitable for mixed farming than for exclusive grain growing.—*Wm. R. Reilly, D.L.S., 1906.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 6—Continued.*

48. This township is on the whole very sandy and light soil, timbered with spruce, jackpine, and poplar. Some of the timber is of commercial value, but the greater part is small and light. There is a good deal of scrub especially along the banks of the Snake Plain creek which runs through this township. This stream has a very slow current as is indicated by its crooked course. There are no water-powers on the stream in this township as in the township to the west. There are no indications of fixed rock, nor mineral of any kind, but there is plenty of fuel consisting of the timber now growing. There are no hay marshes or meadows in any part of the township. There are two lakes partly in this township and in the adjoining lands.—*James Warren, D.L.S., 1907.*

*Range 7.*

11. This township was reached from township 12, range 6, by travelling westward along the north bank of Notukeu creek. The soil is light but of good quality and is suitable for agricultural purposes. The surface is rolling prairie with no timber. Very little hay is to be found in the few scattered hay marshes. Water is very scarce except in Notukeu creek, which crosses sections 31, 32, 33 and 34, and averages twenty-five links wide, two feet deep and has a current of one and one-half miles per hour. No water-powers occur. The climate is moderate with light frosts at the time of survey (September). The only fuel consists of a little brush found along the banks of the creek. No stone quarries nor minerals are found. Antelope and duck were the only game.—*J. L. R. Parsons, D.L.S., 1907.*

12. This township was reached from township 12, range 6, by travelling along the north side of Notukeu creek. The soil is light but of good quality and suited for agricultural purposes. The surface is level and rolling prairie with no timber. A little hay is to be found in a few scattered hay marshes. Water is very scarce except in the creek which crosses section 3, 2, 11, 12 and 13, and averages twenty-five links wide, two feet deep and has a current of one and one half miles per hour. No water-powers occur. The climate is moderate with light frosts at the time of survey (September.) The only fuel is a little brush found along the banks of the creek. No stone quarries nor minerals occur. Game consists of antelope and duck.—*J. L. R. Parsons, D.L.S., 1907.*

48. This township was reached from the trail passing through Mistawasis Indian reserve which is a very good trail for travelling. The township is very much broken up with lakes and small ponds. We traversed eighteen and there are a number nearly large enough to be included in the traverse. The soil is largely clay and would be fit for cultivation, but for the greater part the township is better adapted for ranching as there is an abundance of good feed in the township, but only very few hay marshes. There are no indications of any minerals, but for fuel there is plenty of wood, and in parts there are some good patches of jackpine that would be available for railway ties. There is a fine stream, Snake plain creek, running through the southerly part of the township on which there are many good millsites or water-powers for any kind of machinery. There are few such streams in the territory. From fifty to one hundred horse-power could be easily developed. The water in the lakes and streams is very good being almost entirely free from alkali and in many of the lakes there are plenty of fish. Game is also plentiful in some localities, deer and duck being quite common. On the whole the township would be better adapted for ranching than for any other purpose.—*James Warren, D.L.S., 1907.*



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 7—Continued.*

49. This township was reached from the Snake plain trail through the Mista-wasis Indian reserve. The trail was a very good one and easy to travel on owing to the dry nature of the soil. A great part of the soil in this township is light or sandy, parts of the south and west being somewhat heavier. The soil as a whole is better adapted for grazing or ranching than for farming, as the grass in the woods is very good and there is also plenty of water. The surface of this township is nearly all wood or covered with light scrub. There are a few openings in the north-easterly parts of the township. There is no timber of any commercial value on the township, being chiefly small poplar and scrub. There are no hay marshes or lands, as around the lakes the land is dry. The water is generally good being fresh and not very alkaline anywhere. There are no streams of any size and consequently no water-powers. There is plenty of wood fuel, but there are no indications of coal, of any fixed rock, nor of any kind of mineral. Game is scarce, none of any sort being seen. The soil and surroundings would indicate that the township could be utilized for ranching, there being plenty of pasture in the woods but the scarcity of hay would be a drawback.—*James Warren, D.L.S., 1907.*

*Range 8.*

11. This township was reached from township 12, range 7. The soil is light but of good quality and is suited for agricultural purposes. The surface is rolling prairie with no timber. Fresh water is found in the Notukeu creek, which crosses sections 18, 19, 20, 29, 28, 27, 26 and 36, and averages thirty links wide, two and one-half feet deep and has a current of one and one-half miles per hour. There are no water-powers. Hay grows in the small hay marshes scattered through the township, a large hay marsh occurring in section 6. The hay is marsh grass of good quality. The climate is moderate with light frosts at the time of survey (September.) Fuel consists of a little brush found along the creek. No stone quarries nor minerals were found. Antelope and ducks were the only game.—*J. L. R. Parsons, D.L.S., 1907.*

12. This township was reached from township 12, range 7. The soil is light and sandy and on account of the hills suited only for grazing. The surface is rolling and hilly prairie with no timber. A little hay is to be found in the few small hay marshes in the township. Water is scarce. A little was found in marshes which had not dried up, but no creeks were found and consequently no water-powers. The climate is moderate with sharp frosts at the time of the survey, (September.) No fuel, stone quarries nor minerals were found. Antelope was the only game.—*J. L. R. Parsons, D.L.S., 1907.*

*Range 9.*

11. This township was reached from township 12, range 9. The soil is light, with much sand and gravel, and is suited only for grazing purposes. The surface is rolling and hilly prairie with no timber. Marsh grass of good quality is found in a number of small hay marshes throughout the township. Fresh water is found in the small marshes and in the middle branch of Notukeu creek. This creek, which crosses sections 7, 18, 17, 20, 21, 22, 23 and 24, averages thirty links in width, two and one-half feet in depth and has a current of one and one-half miles per hour. No water-powers occur. The climate is moderate, with light frosts at the time of survey—October. Fuel consists of a little brush found in the valley. No stone quarries nor minerals occur. Antelope and duck were the only game.—*J. L. R. Parsons, D.L.S., 1907.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 9—Continued.*

12. This township was reached from township 12, range 8. The soil is sandy and light, and suited for grazing purposes. The surface is rolling and hilly prairie, with no timber. Marsh grass and red top were found in a few scattered hay marshes. Fresh water was scarce and was found only in a few marshes and in a small lake in section 35. No creeks and no water-powers occur. The climate is moderate, with light frosts at the time of survey—October. No fuel, stone quarries nor minerals were found. Antelope and ducks were the only game.—*J. L. R. Parsons, D.L.S., 1907.*

*Range 10.*

11. This township was reached from township 12, range 9. The soil is light in quality but is fairly well suited for agricultural purposes. The surface is rolling prairie with no timber. Fresh water was found in the small marshes in the township, in a large marsh in section 22, which drains into Turkeytrack lake, and also in Notukeu creek and its branches. One branch, Mosquito creek, flows southerly through sections 19, 18, 17 and 8, joining the main creek in section 5. This is twenty links wide, one foot deep and has a current of one and one-half miles per hour. Old Notukeu creek flows through sections 5, 4, 9, 10, 11 and 12. It is thirty links wide, one and one-half feet deep and has a current of one and one-half miles per hour. No water-powers occur. The climate is moderate, with light frosts at the time of survey—October. The only fuel is a little scrub found along the creeks. No stone quarries nor minerals occur. Antelope and ducks were the only game.—*J. L. R. Parsons, D.L.S., 1907.*

12. This township was reached from township 12, range 9. The soil is light with much gravel and sand and is suited only for grazing purposes. The surface is rolling and hilly prairie with no timber. Marsh grass of good quality is to be had in the few hay marshes in the township. Fresh water is scarce and is found only in the few small marshes which occur. No creeks nor water-powers occur. The climate is moderate with light frosts at the time of survey—October. No fuel, stone quarries nor minerals were found. Antelope was the only game seen.—*J. L. R. Parsons, D.L.S., 1907.*

*Range 11.*

47. This township is reached from township 49, range 12, by travelling south to an old trail called the Carlton trail, running southeast to township 47, range 11. This trail is not much travelled in the eastern part, although it is in good condition. Settlers have travelled to this township without any trail from the west for timber, which they cut on section 31. One of my party went to town for supplies by going west across country to Meeting lake postoffice, which is situated on township 47, range 13, and from there following a new trail until he struck the road leading from town to township 49, range 12. The soil is generally a layer of six to twelve inches of sandy loam over a sandy clay subsoil, well adapted for farming, but if hay were more plentiful it would be a good country for ranching, with its numerous valleys and sloughs giving an abundance of water. Gravel and stones are found on every section, but as this is one of the features of the surrounding country the settlers seem to be quite satisfied with their lot. The surface is hilly and in places very broken, in fact, it is one of the most hilly townships which I have surveyed for a few years. Slopes rising to one hundred feet are frequent, but there are very few coulées with sides steep enough to be an obstacle to travel. From an elevation situated on the southwest quarter of section 16 we had a view of the country for ten



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 11—Continued.*

miles all round except where the sight was blocked by the hill situated on the north boundary of section 10. The north part of the township, especially the northeast, is covered with poplar of fair proportions. On section 31 there was a fine grove of spruce, now cut for the most part by the settlers. It was one of the few places where spruce was found in this township. In fact, there is not a great amount of commercial timber in this section and it would be safe to preserve the timber on sections 33, 34 and 35 for the use of settlers. Besides a mile and a half in the north containing a certain amount of timber the township is a succession of patches of open prairie, extents of scrubby prairie and areas covered with willow brush and scattered bluffs of poplar from four to eight inches in diameter. The largest space of open prairie is situated partly in sections 28 and 21, encroaching towards the east of sections 22 and 27. But although the remainder of the township is not all prairie the bush can easily be cleared, and there exists actually on every quarter section enough of open land to give plenty of farming land to a new settler. Hay is not plentiful. Although the place is within the reach of settlers none have come this way for hay, they seem to prefer going north. However, around the edges of the numerous sloughs existing here there is a fair quantity of hay in some places sufficient to save a good crop. Water is good all over. There are no water-powers, and fuel is not plentiful, except in the north part. No stone quarries nor minerals exist. Duck and prairie chicken were the only game seen, although quite a few tracks of moose and deer were observed.—*Geo. P. Roy, D.L.S., 1907.*

*Range 12.*

11. A good trail from Swift Current affords easy and convenient access to this township. The soil is chiefly loam with clay subsoil making good farm land when not too rough for cultivation. The surface is chiefly open prairie, more than half of the township being very rough. There is no timber except in sections 11, 14 and 23 where there are clumps of willow along Russell creek. The only hay obtainable is a light growth on the uplands. Russell creek traverses the township from northwest to southeast. It has a rapid flow of excellent water which seems to be permanent in this township, but soon after leaving it, becomes entirely absorbed in the lower flats beyond. The width of the creek varies from five to thirty links and the depth from six to eighteen inches. The climate is good and summer frosts do not appear to do any damage, but the precipitation of moisture is light. A small quantity of brush along the creek affords a meagre supply of fuel, but there is no other source of supply nearer than Swift Current. There are no stone quarries or minerals of economic value. The only kinds of game seen were a few antelope and duck. This township is well adapted for ranching purposes fully half of it being too rough for cultivation. The only settlers are the Russell brothers who occupy section 23 and have a small ranch.—*Geo. Edwards, D.L.S., 1906.*

12. A good trail from Swift Current affords access to this township. The soil is chiefly sandy loam with hard clay subsoil, and is well adapted for farming. The surface is open prairie, with no timber of any kind. There are no areas of good hay. Water is scarce and can be obtained only by digging wells. The usual rainfall is light, summer frosts are not frequent, while other climatic conditions are favourable. There is no fuel in this locality and coal would have to be obtained from Swift Current. There are no stone quarries and no minerals of economic value. A few antelope were the only game seen. There are no settlers in this township at present.—*Geo. Edwards, D.L.S., 1906.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 12—Continued.*

49. The route to this township runs west from North Battleford fourteen miles, thence northwest to this township. The first part is an old well-beaten trail extending about twenty-five miles from the town. From there it is merely a track of recent date, made by the settlers, but is in good condition. The soil is sandy loam from six to ten inches deep, suitable for farming. The surface along the north and east boundaries of section 7 is hilly, with a hill about two hundred feet high along the south boundary. The remainder is gently rolling throughout. Except section 6 and a small part of section 7 the township is all bush, mostly heavy bush especially in the northern part. The timber is poplar from eight to fifteen inches in diameter with scattered spruce along the lakes and sloughs, and also some birch. There are a few hay sloughs on the south part of sections 5 and 6 and on section 10, but hay is scarce elsewhere. The water is good wherever found, in the streams and sloughs as well as in two large lakes, Meeting lake on the south and Deserter lake in the northwest corner. These two fine lakes abound with pike. The climate is the same as that of Battleford. We had frost in the beginning of August. Wood the only fuel, is plentiful. Although stones are found on every section there are no quarries nor minerals in the township. There were plenty ducks in Meeting lake, but other game seems to be scarce.—*Geo. P. Roy, D.L.S., 1907.*

*Range 13.*

10. A good trail from Swift Current affords convenient means of access to this township. The soil is chiefly a heavy stiff clay overlaid in most places with loam from four to twelve inches deep. The surface is open prairie with no timber of any kind. There is some good hay land on sections 1, 2 and 3. A creek enters this township in section 18 and leaves it on the south boundary of section 2. It contains good water and has a rapid current. Its average width is about twenty links and its depth twelve to eighteen inches. A small creek from the north enters it near the southeast corner of section 18. There are no other creeks of any account. The climate is good, although the average rainfall is light. Summer frosts do not seem to prevail. No fuel supply is available nearer than Swift Current. There are no stone quarries nor minerals of economic value. The only kind of game noticed was antelope. There are no settlers here at present. Part of the land is suitable for cultivation, but it is on the whole better adapted for grazing.—*Geo. Edwards, D.L.S., 1906.*

11. A good trail from Swift Current affords means of easy access to this township. The surface is prairie without any timber. There are no hay meadows. A small creek crosses sections 35 and 36. It has good water and a rapid permanent current. In the northern part of the township there are three small creeks with good water but there is little or no flow in dry weather. The average fall of rain or snow appears to be light. Summer frosts are not frequent while other climatic conditions are favourable. Fuel is not obtainable here, the nearest source of supply being Swift Current. There are no stone quarries or minerals of economic value. No game was seen except a few antelope. There are no settlers in the township at present, but it will doubtless be taken up in the near future as about half of it is good for general farming.—*Geo. Edwards, D.L.S., 1906.*

49. This township can be reached either by the trail running northeast nearly direct from Battleford to township 49, range 14 and thence west, or from the road leading to township 49, range 12 which strikes near the southeast corner of this township. Most of the trails are only tracks followed by settlers. The soil is mostly



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 13—Continued.*

a layer of eight to ten inches of sandy loam over a sandy clay subsoil, well adapted for farming. The surface of this township is rolling covered in the south part with scattered bunches of poplar, willow brush and scrub with generally a good piece of scrubby or open prairie in every section, which makes the settling of this part very easy. The middle part is more wooded and the northern sections contain heavy timber and thick bush with few openings. Except around the lakes, where there are some spruce, the timber is poplar of very little value except as fuel. There is a certain quantity of hay in the township especially on section 5 but the settlers near by had to go north for most of the hay they required for the winter. There are a large number of sloughs and lakes in this township, the most remarkable being a large and deep lake on sections 28 and 27, and Deserter lake in the northeast corner. Pike are plentiful in these lakes. Water is good wherever found. The climate appears to be good although we had slight frosts in the latter part of July. The available fuel is wood and the supply is plentiful especially in the north part. There are no water-powers in this township, no stone quarries nor minerals of any kind. Game consists of chicken and numerous duck.—*Geo. P. Roy, D.L.S., 1907.*

*Range 14.*

49. We reached this township by the graded road running due north from North Battleford for a distance of fifteen miles, and thence by following an old trail called the Buffalo lake trail for the remainder of the distance. Mostly all through the soil is a coat of sandy loam six to ten inches deep over a sandy clay subsoil, altogether suitable for farming. The surface is rolling covered with a growth of scrub, willow brush, bluffs of poplar four to ten inches in diameter, and also patches of open and scrubby prairie. There is no spruce nor any kind of commercial timber. The only wood is a small quantity of poplar. The densest wood is found in the northeast corner of the township. There are a few hay sloughs, the largest covering nearly half of section 24. Poplar is the only fuel readily available, but it will not last long after the country is settled. There are no water-powers, stone quarries nor minerals of any kind. Game appears to be scarce. The climate is the same as in Battleford.—*Geo. P. Roy, D.L.S., 1907.*

50. This township can be reached by the trail running northerly from Battleford to township 49, range 14, where it crosses on section 33 what is called the Buffalo lake trail, coming also from this town. This trail enters into the township by crossing the south boundary of section 3 and leaves it on the east boundary of section 13. The soil is mostly a coat of sandy loam, six to ten inches deep over a sandy clay subsoil well adapted for farming. The soil in this township is better than in any of the other townships forming part of my contract. The surface is rolling and covered with a succession of patches of open prairie, scrubby prairie which a good fire would clear, and large spaces containing small poplar, willows and scattered bluffs of poplar. There are no spruce groves, the only wood of the kind being on the shores of the lake situated on the east boundary of sections 25 and 36. It is on these two sections also where the heaviest and densest timber is seen, penetrating from there into sections 26 and 35. There is also quite an amount of fairly large poplar on sections 13 and 24, and large extents covered with it on the other sections, but these extents are intersected with spaces of prairie, scrub, small willows and small poplar. There are hay sloughs on every section, but the largest ones are situated on section 3 and sections 23 and 24. The hay in those sloughs was cut this year by settlers from the south. The water is good everywhere



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 14—Continued.*

in the sloughs and the lakes. The climate is the same as in Battleford. The only kind of fuel known is wood and the supply, especially in the south part of the township, cannot last long if not carefully looked after. We saw no stone quarries nor minerals of any kind. Plenty of duck, some prairie chicken, and a couple of scared deer constituted the game that we saw here, but this part of the country has the reputation of being a very good game country.—*Geo. P. Roy, D.L.S., 1907.*

51. The southern part of this township is reached by following the graded road fifteen miles due north from North Battleford and the Buffalo lake trail running northeast to township 49, range 14, through which it runs nearly north until it reaches section 33 where we left it to go into township 50, range 14; across this last township we travelled to township 51, range 14, on a trail of our own. The northern part can be reached by a trail which crosses it diagonally on sections 20, 31 and 32. I was informed that this trail comes from Jackfish lake but I could not ascertain where it leads after leaving township 52, range 14, along the east outline of which it runs for three miles. It is in good order. The surface is rolling covered in the southwestern part with patches of light scrub, willow brush and scattered bluffs of small poplar. Brush and bush thickened gradually going northeast until on sections 35, 36, 24 and 25 we met a dense wood of poplar, spruce and jackpine six to eighteen inches in diameter. There is, however, no extent of commercial timber of any consequence, poplar being nearly the only kind all over. However, near the centre of section 24 we saw two groves of fine spruce ten to twenty inches in diameter, each about three or four acres in area. The soil is a coat of sandy or black loam six to twelve inches deep over a sandy clay subsoil; gravel being found in some parts. Although the soil is light it is well suited for farming. Hay is found along the edges of the large sloughs and in some of the smaller ones, but there is no great quantity of slough hay. Water is good all over the township in the sloughs and the lakes. There are no streams and consequently no water-falls. The only fuel available is poplar and there is sufficient of it for many years to come. There are no stone quarries nor minerals of any kind. We saw no game during the survey, except a few duck. The climate is the same as that of Battleford.—*Geo. P. Roy, D.L.S., 1907.*

52. We reached this township by opening a trail of our own which leads from the Buffalo lake trail in township 49, range 14, through townships 50 and 51, range 14, to the wagon trail crossing the south sections of this township. I was informed that this wagon trail came from North Battleford through the Jackfish Lake settlement. It enters township 51, range 14, on section 30, leaving it in section 32, then runs nearly west across sections 5, 4, 3 and 2, northeast across section 1 and part of 12, then along the outline in and out of the township until it leaves it on section 24. I followed it to the base line, which it crosses in a northeasterly direction on the south boundary of the east half of section 32. It is a good wagon trail. The soil is a coat of sandy or black loam over a clay or sandy clay subsoil and the surface is rolling. Along the east boundary of section 36 the country is covered with a thick growth of poplar eight to ten inches in diameter to a coulée about fifty feet deep at the northeast corner of section 25. Along the east boundary of sections 25 and part of 24 there is a thick growth of two-inch poplar and small brush followed by poplar six to ten inches in diameter. From the stream crossing on section 24 to the end of this meridian, the bush is thick poplar with some jackpine and spruce. It grows in size until on the east boundary of section 1, we found spruce from ten to eighteen inches in diameter, and poplar eight to fifteen inches in diameter. We found no hay sloughs along this line. The water is good in the small streams which crosses the line. There were no



## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 14—Continued.*

water-powers in this township. Wood is the only fuel available. There is a quantity of it all over the township. We saw no stone quarries, nor minerals of any kind. Game was scarce. This climate is the same as that of Battleford.—*Geo. P. Roy, D.L.S., 1907.*

*Range 15.*

49. This township is reached without any difficulty from the Battleford-Birch Lake trail which passes through township 49, range 16, being from one-half to three miles west of the line between the ranges. The trail is a good one and, although there are two creeks to be crossed, makes the township easily accessible. The soil throughout the township is more or less uniform, consisting of two to three inches of black loam over a subsoil varying from sandy clay to clay, with gravel in some places. Stones and boulders occur to a small extent. Except the southwestern corner of the township the surface is hilly, being much broken by coulées. The northern and western portions of the township are covered with scrub poplar and willow and the western portion with clumps of poplar varying in diameter from four to eight inches. The southeastern portion is more open, although more or less scrub occurs. While no large hay sloughs occur hay could be cut from around nearly all the small lakes or ponds throughout the township. Grass is abundant and of good quality. Several ponds, marshes and small lakes occur in the northern and central portions of the township. Losthorse creek rises in section 25 and flows generally southwest leaving the township in section 4. This with the exception of a small creek in section 5 constitutes the only outlet. Losthorse creek varies from ten to twenty-five feet in width, and from two to four feet in depth with a current averaging about two and a half miles per hour. The water throughout the township is excellent and the supply is permanent. No water-power is available. Besides some marshes adjacent to the creek no land would be flooded. General climatic conditions were favourable, but frosts occur early in the year. Fuel, consisting of poplar, is abundant. No coal or lignite veins economically valuable, minerals or stone in place were discovered. Sand-hill crane, duck of various kinds and prairie chicken were common. Indications of moose and deer were noticed although no large game was seen.—*H. S. Holcroft, D.L.S., 1907.*

50. The old Carlton-Regina trail crosses the northeastern portion of this township entering section 24 and leaving near the northeast corner of section 34. This trail joins the Battleford-Birch lake trail in township 51, range 15. From Battleford the township is easily reached by the trail to Birch lake which passes within half a mile of the southwest corner and enters section 31 near the northwest corner of the township. Both of these trails are in good condition and make the township easily accessible. The soil is rather uniform, varying from two to eight inches of black or sandy loam with a subsoil varying from clay to sandy clay. Stones and gravel occur slightly, but are by no means troublesome. The surface is generally gently rolling, but the northeast corner is rather heavy. The surface is covered with scrub poplar, an willow throughout, while all but the southeast portion is covered with a more or less heavy growth of poplar, ranging from five to twelve inches and averaging about six inches in diameter. Several hay sloughs occur, notably in sections 34, 27, 29, 20 and 17. Grass is abundant. Excellent water occurs throughout the township. Several small lakes and treams making the supply permanent. Outside of the sloughs and marshes mentioned no land is liable to flooding. No water-powers exist. Stone in the shape of boulders suitable for building purposes, occurs to a small extent, but



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 15—Continued.*

no stone in place or minerals of economic value were discovered. Fuel is abundant, consisting of dry poplar. The general climatic indications were favourable but summer frosts are more or less frequent. Tracks of moose and deer were common, although no animals were actually seen. Duck, a few geese, sand-hill cranes and some few chicken were noticed.—*H. S. Holcroft, D.L.S., 1907.*

51. The trail from Battleford to Birch lake enters this township through sections 6, 7, 17 and 20. In section 20 it branches, one branch going westerly around Birch lake, and the other going easterly, passing through sections 21, 22, 23, 24 and 25. These trails are moderately good and make the township easily accessible. By trail the south end of this township is about fifty miles northerly from the town of North Battleford. The soil is a light covering of black loam from about two to six inches deep on a top soil of sandy loam or clay loam with usually a subsoil of clay or clay loam. This soil should produce excellent crops of the usual products of the soil in this province. Practically the whole of the surface is covered with a growth of varying density of scrub poplar and willow. Sections 1 to 12, inclusive, and sections 17, 18, 19 and 30 are more lightly covered than the remainder of the township. Bluffs of poplar and balm of Gilead from three to ten inches in diameter occur frequently in the above mentioned sections. The whole of the northeastern portion is densely covered with scrub, moderate sized poplar and balm of Gilead. Some small open spaces occur in sections 1, 2, 3, 10, 11 and 12. An occasional small spruce was seen in the eastern part of the township. The surface is nearly level in the western portion, rolling in the middle and somewhat hilly in the eastern portion. A small amount of hay could be cut around some sloughs in the southwestern portion of the township. The rest of the township contains very little hay except very small amounts around the edges of very small sloughs scattered throughout the township. A large hay meadow occurs on the boundary between sections 12 and 13. Birch lake occupies a great portion of the northern part of the township. This lake presents a very rough outline, having several large points extending out into the lake and several deep bays extending into the land. In sections 30, 29 and 20 the shores are not well defined, being marshy. Several small lakes and sloughs occur throughout the township. Broughton lake in sections 13, 14 and 24 is a long and very narrow lake lying between high banks. Though very narrow, averaging only about one-eighth of a mile in width, it is very deep and contains a large quantity of fish. Birch lake is very plentifully stocked with pike and pickerel, and I believe whitefish also. All the water is fresh and is sufficient and permanent. No power could be generated from falls or rapids. A heavy frost occurred on the 12th of August, but apparently did no harm. This season was very wet and somewhat cold, but the climatic conditions seemed in general to be favourable. Fuel, in the shape of poplar and balm of Gilead, is plentiful throughout all the township. No coal or lignite veins were seen. Boulders and stones occur in small numbers on the surface. Throughout the township no stone in place or any economically valuable minerals were encountered. Game is rather scarce, a few duck and an occasional prairie chicken were seen, also some traces of deer, bear and muskrat. Badger, coyotes and gophers were scarce.—*H. S. Holcroft, D.L.S., 1907.*

52. The western portion of this township is reached without any considerable difficulty by the trail from Battleford to Birch lake, a branch of which passes round the west of Birch lake, entering the township in section 7. Another branch of the same trail enters the township in section 18. In wet weather both these trails are very difficult to travel, as the first follows the west and north shores of Birch lake, while the other passes in close proximity to the southern shore of Long lake, the



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 15—Continued.*

shores of both lakes in these places being marshy. The soil throughout the township is very uniform and in most places of first class quality, consisting of from two to ten inches of black or sandy loam with a subsoil varying from sandy clay to clay. Pebbles and stones occur but seldom, and never in such quantities as to hinder agricultural operations. The surface is gently rolling, there being two general slopes, one towards the northwest drains into Long lake, while the other, comprising practically all the township, drains into Birch lake. Spruce is found scattered all over the township and around Birch lake. While much of the larger timber, especially that adjacent to Birch lake has been cut, there still remains a considerable quantity of good timber, averaging about twelve inches in diameter, although some trees thirty inches in diameter were noticed. A few tamarack occur in the northeastern portion of the township. Poplar and balm of Gilead occur uniformly throughout the township, having a maximum diameter of about fifteen inches and averaging about eight inches. Jackpine in small quantities occur on nearly all the ridges in the central and northern part of the township, having a maximum diameter of twenty-two inches, but averaging about ten inches. Some poplar and willow occur all over the township. The marshes along the north shore of Birch lake and all around the shores of Long lake would supply an immense quantity of fine hay, especially sections 17 and 20, although in a wet season much of this would be difficult to cut. A few meadows scattered throughout the township would slightly augment the supply of hay. The water throughout the township is excellent, due, no doubt, to the fact that the moss and marshes form excellent reservoirs, keeping the creeks full of pure cold water. Several of these flow south into Birch lake. This lake occupies practically all of the southern two tiers of sections and extends also into township 52, range 16. The water is good. The shore presents a very broken appearance and is generally ill-defined, being marshy for the most part and often separated from a lagoon or marsh by a thin fringe of boulders. Long lake, which occupies practically all of sections 19, 30, 31 and parts of sections 29 and 32, is a fine sheet of clear, cold water, extending far to the north. A small lake occurs on the east outline in sections 24 and 25. A few small lakes and sloughs scattered throughout the township still further increase the water supply. No water-powers occur. Although the summer of 1907 was extraordinarily wet the general climatic indications were favourable, the nights being cool and the days moderately warm. Frosts occurred on August 1st and 2nd, but apparently no harm resulted. Fuel is plentiful throughout the township. No coal, lignite or minerals of economic importance were discovered. Stone suitable for building purposes in the shape of boulders and irregular pieces of rock occur in several places on the shores of Birch lake, but no stone in place exists. Game, while not abundant, is frequently found. A moose cow and calf were seen on Birch lake. Several varieties of duck, a few ruffed grouse, some pelican, sand-hill crane and muskrat were noticed. Traces of deer and bear were observed. Both Long and Birch lakes contain an immense quantity of fish including pike, pickerel, sucker and whitefish.—*H. S. Holcroft, D.L.S., 1907.*

*Range 16.*

8. The route to reach this township is by trail from Swift Current. This trail runs south to township 10, range 14, from which point we went in a southwesterly direction to the northeast corner of the township. It is a good hard road most of the way. The soil is for the most part about six inches of clay loam with a clay subsoil and is suitable for grazing being covered with good grass. The whole township is prairie with a little scrub along a small creek in section 35. The surface is mostly



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 16—Continued.*

rolling but in some places quite hilly. The water is good and many springs appear in the hills but none large enough to be utilized for water-power. The climate is good. There is scattered stone suitable for building but no indication of other minerals of economic value. The wild animals found were antelope, coyote, badger and gopher.—*J. Waldron, D.L.S., 1907.*

52. The township is reached without difficulty by means of the Battleford-Birch Lake trail, which enters the township from the southeast in section 2. The soil consists of from three to seven inches of black loam with a subsoil varying from sandy clay to sandy loam. Stones and small boulders occur in several parts, but are not of sufficient size or quantity to hinder agricultural operations. The southern part of the township is covered with clumps of poplar and willow scrub but towards Birch lake, which lies in the southeastern part of the township, these become more dense and much heavier. To the east and north of Midnight lake which occupies a large portion of the western part of the township some spruce and a few tamarack occur. Although much of this has already been cut there are perhaps fifty or sixty thousand feet of lumber still standing, the trees considered averaging eight inches in diameter. Between Midnight lake and Long lake, which occupies the northeast corner of the township, the country is gently rolling and covered with poplar and balsam of Gilead averaging six inches in diameter, and dense scrub and underbrush. Thus, except the southern part, the township is heavily wooded and fuel, consequently, abundant. Excellent hay meadows occur in the south and, in fact, grass is everywhere abundant. A large hay slough occurs to the west of long lake. The southwestern part of the township is level the remainder being gently rolling. Three large lakes enter the township on the west. Midnight lake occupies nearly all of sections 7, 18, 19, 30, 17, 20, 29, 28, 21 and 22. The water while slightly brackish is not at all bad. Several streams enter the lake, the largest, formed by the union of creeks from Birch and Long lakes, is about ten feet wide, and from two to four feet deep with a current of two miles per hour. Long lake lies in the northeast occupying sections 36, 25 and 24. The water is clear and the shores sandy. Birch lake, although a very large body of water, occupies only sections 1 and 12 of this township. The water is good although not so clear as that of Long lake, the shores being more marshy. No water-power exists. The days are warm and the nights are cool but so far (July) no summer frosts have occurred. No coal or lignite is known to occur, nor was any stone in place found. While deer, bear and moose undoubtedly exist, the only game seen consisted of duck which were exceedingly abundant. The lakes, especially Birch and Long lakes, contain an abundance of fish. The two southern tiers of sections are reserved for Indian lands and are exceedingly well adapted for ranching or for farming. Several itinerant bands of Indians of a rather fine type were met with around the lakes. One rancher has done considerable work to the south of Midnight lake and reports it as an ideal ranching district, the stock finding ample shelter amongst the dense clumps of scrub, and hay being everywhere abundant.—*H. S. Holcroft, D.L.S., 1907.*

*Range 17.*

8. The route to reach this township is by trail from Swift Current to township 10, range 14. From here we travelled in a southwesterly direction to township 8, range 16, and then west to range 17. The soil varies from a sandy to a clay loam of about six inches with a gravelly or clay subsoil. The whole surface is rolling, open, prairie, no timber of any kind being found, and is very suitable for grazing. A few sections in the northern part of the township are suitable for farming. There are no



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 17—Continued.*

large hay meadows but good hay could be cut on the high ground. There is plenty of fresh water in small sloughs and in springs that rise in the southeast and northwest parts of the township. There are no water-powers. The climate is good, only a few frosts occurring even in the early part of October. The nearest fuel is about twenty miles west in the Cypress hills. There is some surface stone, but no minerals appear. Antelope, coyote, badger and gopher are plentiful.—*J. Waldron, D.L.S., 1907.*

*Range 18.*

8. This township is most easily reached by a trail running south from Gull lake to some settlers' homes in township 9, range 19. From here it is good travelling across the open prairie into township 8, range 18. This trail is good at all seasons of the year. The soil is mostly eight inches of light loam with a clay subsoil, and is suitable for farming or grazing purposes. The eastern part of the township is quite rolling while the western part is quite smooth and is very good farming land. Grass is abundant everywhere. There is no timber and the nearest fuel is in the west side of township 8, range 20. Water is not very plentiful on the surface in autumn but where obtained it is fresh. No water-powers occur. The climate is good. Some stone can be had in the southern part of the township but there are no indications of minerals. Antelope, badger, coyote and gopher are plentiful.—*J. Waldron, D.L.S., 1907.*

*Range 19.*

8. This township is best reached by a trail from Swift Current which enters the township at the northwest corner. It is hard and passable at all seasons of the year. The soil is mostly a sandy loam with a clay subsoil, and is suitable for agricultural purposes. The surface is mostly level except in the south where it becomes more broken. No wood is found in the township but it is to be had in the west side of range 20 of the same township. There is also a little wood in a coulée south of this township. Hay can be had anywhere in the township and in large quantities in the central part. Fresh water is plentiful in Rock creek which passes through the township from one to two miles from the east boundary. Sloughs are not plentiful but there are two lakes with water only slightly alkaline. No water-power is available. The climate is good. In the south there are a few scattered stones and some indications of soft coal which is plentiful, and has been mined in the township to the south. No other minerals of economic value appear. Game is not plentiful although some antelope were seen. Coyote, gopher and badger are numerous.—*J. Waldron, D.L.S., 1907.*

*Range 20.*

8. This township is reached by a trail from Gull lake which enters the northeast corner of the township. The soil varies from sandy loam to clay and gumbo with clay subsoil. The surface is fairly level in the eastern and southeastern parts of the township. The central and southern part is broken by Swiftcurrent creek. On the west side are the Cypress hills, at the foot of which is Jones creek, a branch of Swiftcurrent creek. Between the creeks is a level bench of good prairie. The level part of the township is suitable for farming while the sections through which the creeks pass is especially suitable for ranching. Hay can be had in quite large quantities on the level sections. Fresh water is plentiful in the creeks, and several springs occur in hills along the creeks. The flats along the creeks could be made quite fertile by irrigation and some work has been done along that line by some of the settlers.



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 20—Continued.*

There are no water-powers available. Wood is found only on the western side of the township in the coulées, and some indications of coal appear in the Cypress hills in section 18. The timber is principally poplar and willow with some spruce and is very suitable for fuel and building purposes. Scattered stone is present in the broken parts, but no minerals besides coal appear. The only animals seen were coyote, badger, gopher and a few prairie chicken.—*J. Waldron, D.L.S., 1907.*

*Range 21.*

8. This township is best reached by a surveyed trail from Maple creek which enters the township on the west side in section 18. The soil is mostly clay loam with a clay subsoil. The surface is rolling in the west while the central and eastern part is hilly. The township is open prairie except the coulées on the eastern side. These are generally wooded with poplar and willow, while a few good spruce occur. The timber is suitable for fuel or building purposes. The whole township has abundance of grass and is especially well suited for grazing. Fresh water is to be found in several small lakes and in the coulées on the eastern side. Swiftcurrent creek rises in section 10 and flows south nearly parallel to the east side of sections 10 and 3. No waterfalls occur but the creek has sufficient fall to be used for irrigation purposes with good results. The climate seemed good but suggests the possibility of early frosts because of its high altitude. Scattered stone is plentiful. A very soft coal appears in section 13 but seems charred. No other minerals appear. Prairie chicken, coyote and badger were the only animals seen.—*J. Waldron, D.L.S., 1907.*

*Range 27.*

51. The surface of the township is from rolling to hilly. It is dotted all over with bluffs of poplar, many sloughs and patches of marsh. Four large lakes occur in the following sections, one in 14, one in 26 and 27, one in 31, and one in 32. The lakes in sections 14 and in 26 and 27 are much smaller than they were at the time of the original survey. These lakes have no outlet and rise and fall in wet and dry season the same as sloughs. The lakes in sections 31 and 32 have not changed much. They have an outlet are fed by springs and do not vary much in height. Big Gully, a permanent spring creek, flows out of the lake in section 32 through sections 32, 28, 30, 20, 17, 16, 9, 3 and 2. From section 29 it runs into 30 is there joined by a branch from the west and passes through a marsh from 30 to 29. From section 29 it runs through a valley from three-quarters to half a mile wide, formed by banks from one hundred to one hundred and fifty feet high. The stream passes through several stretches of muskeg, where it has no channel. The water in most of the sloughs is good, in the lakes in sections 31 and 32 and in the creek it is excellent. A limited quantity of building logs, fencing and fuel is found on every section. The soil is mostly a good sand loam with odd patches of clay loam on sandy and clay subsoils. It is generally second class. The southwest corner is the best part of the township. Hay is not very plentiful but a considerable quantity can be cut around sloughs and in the valley of the creek. The trail from Lloydminster to Hewitt landing and Onion lake runs through sections 6, 7, 8, 17, 20, 21, 28 and 33. The creek is bridged where the trail crosses. A number of settlers have homesteaded and are making good progress. Northminster postoffice is on the northeast quarter of section 18. No stone is found other than scattered field stones around several sloughs and lakes and along the creek. There is no water-power that would be permanent. No minerals of economic value are found. Game is limited to badger, coyote, skunks, muskrat, prairie chicken, duck and geese, none of which were plentiful. The weather during the sur-



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## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 27—Continued.*

vey (October) was exceptionally fine. General appearances indicate a section of country that is supplied with a good deal of rain. Vegetation is excellent and water is good while the soil is rich and fuel plentiful. These conditions make it well adapted for mixed farming where stock raising would be the principal object. Horses, cattle, or hogs would do well, and if properly cared for the chances of failure with either would be slight.—*Wm. R. Reilly, D.L.S., 1907.*

52. The surface is rolling to hilly, most hill slopes being gradual and capable of tillage. There are many lakes and sloughs, the majority in the south half of the township. The water in all these water areas is fresh and much lower than at the time of the original survey. The lakes on the north boundary of section 9 and in the northeast quarter of section 8 have dried up very much. The lakes in sections 5 and 6 are fed by springs and have not changed much, the water in these is extra good. Small poplar bluffs and clumps of willow are dotted all over the township, the popular is small but affords a limited supply of fencing and firewood. On sections 6 and 7, south of the lake in 15, and south of the lake in 12, are belts of poplar with timber large enough for log buildings. The soil is mostly of fair quality being sand and clay loams on clay and sand subsoils. Hay of good quality can be cut around nearly all sloughs and lakes but no great quantity in any one place. This is not a grain district but it is well adapted for dairying, cattle and other stock raising in connection with general farming. A number of settlers have recently taken up homesteads and are making improvements. A trail from Lloydminster to Hewitt landing and Onion lake runs northeasterly through the township from section 4 to section 36. There is very little stone, no minerals of economic value, and no water-powers. Game is scarce, and is limited to badger, coyote, skunks, muskrat, gopher, prairie chicken, duck and geese. The weather during the survey was extra fine for the season of the year. Grain crops in this district were damaged by frost owing to the backward spring and late sowing.—*Wm. R. Reilly, D.L.S., 1907.*

53. Saskatchewan river enters this township in the north half of section 24 and leaves it in the north half of section 1 crossing the township in almost a straight line. Two large wooded islands are formed in the river one in sections 19 and 20 about three-quarters of a mile long, and one on sections 20 and 17 about half a mile long. The south bank of the river is very rough. A mile from the west boundary it extends back a mile in broken steeps rising to a height of over four hundred feet. It gradually falls towards the east to about two hundred feet above the river in section 1. The north bank is not so rough, it extends back about half a mile, rising to an average height of about two hundred feet. South of the river is very rolling or hilly. A number of lakes and sloughs are scattered over this part but are apparently much smaller than at the time of original survey. Bluffs and stretches of willow and poplar of small growth are thinly scattered over the upland and down the river bank. North of the river is a rolling bluff country, which gradually rises to the north. The most of the northeast quarter of the township is nearly covered with scrub poplar, odd clumps of spruce six to fifteen inches in diameter, small patches of tamarack six to ten inches in diameter and heavy willow, poplar, alder and other underbrush. Alternate bluffs of poplar, patches of willow and poplar scrub, and large prairie openings occur on the remainder of the tract north of the river. Over this whole area a number of sloughs and lakes are scattered. Large lakes cover a portion of the following sections west half sections 14, 35 and 36, northeast quarter 33, northwest quarters 31, 21 and 22. Water in this lake is strongly alkaline. Water in the majority of sloughs and lakes is good. The soil is mostly sandy loam of fair quality but the northeast corner of the township is very light. A considerable quantity of hay can



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE THIRD MERIDIAN.

*Range 27—Continued.*

be cut in the northwest quarter of the township and a limited amount in other parts. The township is good grazing ground and well adapted for stock raising. Only a very few quarter sections are fit for farming but many small patches can be cultivated. General conditions show a temperate summer climate, with plenty of rain to produce excellent grass. The autumn was exceptionally fine; the river was not frozen over for safe crossing until November 25. A Hudson's Bay company's reserve covers the most of sections 12 and 13. The telegraph line from Battleford to Onion lake crosses sections 25 and 35. The trail from Lloydminster to Onion lake, via Hewitt landing, passes through the west half of sections 1, 12 and 13 and sections 24, 23, 26, 27, 28, 33 and 32. Hewitt landing postoffice and ferry, is on the northeast quarter of section 1. The postoffice and ferry takes the place of Fort Pitt which has been abandoned. There are no minerals or stone other than field and river boulders and no water-powers except what might be developed in any township on the river. Game was fairly plentiful, badger, coyote, muskrat, skunk, prairie chicken and ducks were often noticed. North of the river a few jumping deer were seen, also tracks of lynx, bear, mink and fox.—*Wm. R. Reilly, D.L.S., 1907.*

54. This is a fractional township composed of the south halves of sections 1, 2, 3, 4, 5 and 6. It is similar in appearance to the north part of township 53, range 27, being rolling to hilly, bluff country with sloughs, lakes, swamps and prairie openings. A large swamp runs through the south part of sections 1 and 2. The telegraph line to Onion lake crosses the west half of section 2. The trail from Hewitt Landing to Onion lake crosses section 5. Odd clumps of spruce and tamarack six to twelve inches in diameter occur in sections 1 and 2, and poplar in bluffs four to ten inches in diameter on every section. The soil is sandy loam. No minerals, stone quarries or water-powers occur. Game seen was coyotes, badgers, skunks, muskrats, prairie chickens and ducks.—*Wm. R. Reilly, D.L.S., 1907.*

*Range 28.*

54. This is a small fractional township, composed of the east three-fourths of the south half of section one. The surface is rolling to hilly prairie, with small bluffs of poplar and odd sloughs. A small lake cuts the northwest corner. The soil is sandy loam. There are no minerals, stone quarries or water-powers. No game was seen.—*Wm. R. Reilly, D.L.S., 1907.*

## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 6.*

4. (*Part.*)—This township is reached by a trail leading from Medicine Hat to Milk river entering on section 35, and crossing it in a southwesterly direction. The soil is composed mostly of a light loam underlain by a clay subsoil and suitable for grazing purposes. A good crop of natural hay can be procured from a number of small marshes scattered throughout the township, and in order to increase the crop an irrigation ditch collecting the waters of a few small water-courses, was constructed by a ranching firm. The surface is that of a slightly rolling prairie dotted here and there with sage brush. The small streams flowing in this locality have not a permanent flow and at the time of the survey, water could be obtained only from pools in one of them, and at rare intervals along its course, but a permanent supply can be obtained at a few feet from the surface by sinking wells. The water is free from



## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 6—Continued.*

alkali. No water-powers, stone quarries nor traces of minerals of economic value are known to occur in this township. The survey operations in this part were carried on towards the end of November during which time the weather was of course cold and wintry. This region receives the beneficent effects of the Chinook winds. No timber exists in this township. Coal for fuel can be procured at a distance of about twelve miles in an easterly direction. The only existing game is prairie chicken, but at the present they are very scarce.—*Louis E. Fontaine, D.L.S., 1907.*

27. This township may be reached by following a good graded road south from Lloydminster for about thirty-two miles along the fourth meridian, crossing Battle river about thirty miles south of Lloydminster, thence by a fairly good trail to the east side of Sounding lake where there is a small detachment of mounted police, thence along the valley and on the west side of Sounding creek crossing a branch of said creek coming in from the west about fifteen miles from the lake, thence over open rolling prairie to the township. The soil is generally heavy clay but on the higher ridges and hills there is gravel and stones. The surface is rolling prairie and is quite hilly on the east side of the township. There are only a few small hay marshes although there is considerable low flat land but it is alkaline with short grass and weeds not suitable for hay. The two lakes in this township are alkaline and were nearly dried up at the time of survey. There is a spring of good cold water in the northeast corner of section 2 at the head of an alkaline flat which extends across section 3. This flat has the appearance of being covered with water in the spring of the year but was perfectly dry at the time of survey (September) and could be driven over anywhere with the wagons. The only game seen was antelope. There are no water-powers, minerals or stone quarries.—*David Beatty, D.L.S., 1907.*

28. This township may be reached by following a good graded road from Lloydminster south along the fourth meridian for about thirty-two miles crossing Battle river about thirty miles from Lloydminster, thence by a fairly good trail to the east side of Sounding lake where there is a small detachment of mounted police, thence along the valley and on the west side of Sounding creek for about fifteen miles where I left the valley, thence over rolling prairie to the township. The soil in this township is mostly clay without any black soil on top and may be ranked third class. The surface is open rolling prairie with a few small patches of small poplar not large enough for fuel. The nearest good fuel is in the valley of a branch of Sounding creek coming in from the west about thirty miles distant. There is a large flat or lake (in the early part of the season) on sections 3, 4, 9 and 10. There was a little water in a few places at the time of survey but the horses could not reach it on account of wet ground and I was obliged to draw water from Sounding creek in township 30 for the horses and camp use. There was nothing but weeds growing on the driest part of this flat and I surveyed it as a lake. I found no good water in the township. There are no water-powers, minerals or stone quarries. The only game I saw was antelope.—*David Beatty, D.L.S., 1907.*

29. This township may be reached by following a good graded road south from Lloydminster for about thirty-two miles along the fourth meridian, thence by a fairly good trail to the east side of Sounding lake where there is a small detachment of mounted police, thence up the valley and on the west side of Sounding creek for about fifteen miles, crossing a branch of said creek coming in from the west, thence out of the valley and over rolling prairie to the township. The soil is generally heavy clay without any black soil on top and may be ranked as third class. The surface is rolling prairie without any timber, the nearest firewood is in the valley of the creek



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 6—Continued.*

crossed on the route from Sounding lake. The water is alkaline and is also very scarce, as the small sloughs dry up in midsummer. There is very little hay land in the township. There are no water-powers, mineral or stone quarries. A few duck was the only game seen.—*David Beatty, D.L.S., 1907.*

30. This township may be reached by following a graded road south from Lloydminster along the fourth meridian for about thirty-two miles, crossing Battle river at thirty miles south of Lloydminster, thence by a fairly good trail to the east side of Sounding lake where there is a small detachment of mounted police, thence following the valley and on the west side of Sounding creek for about fifteen miles crossing a branch of said creek coming in from the west, thence over rolling prairie to the township. The soil of this township is generally heavy clay without any black soil on top and may be ranked as third class. The surface is rolling prairie with neither wood nor scrub. The nearest wood is in the valley of a branch of Sounding creek about fifteen miles distant. There are a few bunches of willow along Sounding creek which crosses the southern part of the township. There is very little hay land in the township. The only fresh water is that of Sounding creek. There are no water-powers or falls although small water-powers may be created by building dams across Sounding creek between the high banks. I saw no indications of coal, mineral or stone quarries. The only game I saw was antelope and duck, the latter being very plentiful on Sounding creek.—*David Beatty, D.L.S., 1907.*

31. This township may be reached by following a good graded road south from Lloydminster along the fourth meridian for about thirty-two miles, crossing Battle river about thirty miles from Lloydminster, thence by a fairly good trail to the east side of Sounding lake where there is a small detachment of mounted police, thence along the valley and on the west side of Sounding creek for fifteen miles, thence leaving the valley and over rolling prairie to the township. The soil is generally heavy clay without any black soil on top and may be ranked third class. The surface is slightly rolling prairie. There is no wood in the township, the nearest fuel is in the valley of a branch of Sounding creek coming in from the west and about twelve miles distant. I found enough fresh water in small sloughs for camp purposes but later in the season the sloughs were all dry. There is very little hay land in the township. There are no water-powers, minerals, or stone quarries. Duck was the only game seen in the township.—*David Beatty, D.L.S., 1907.*

*Range 7.*

27. This township may be reached by following a good graded road south from Lloydminster along the fourth meridian for about thirty-two miles, crossing Battle river about thirty miles from Lloydminster thence by a fairly good trail to the east side of Sounding lake where there is a small detachment of mounted police, thence along the valley and west side of Sounding creek for about fifteen miles, thence leaving the valley and over rolling prairie to the township. The soil in this township is principally clay without any black soil on top. The surface is rolling prairie without timber or scrub and the nearest fuel that I know of is in the valley of a branch of Sounding creek coming in from the west about thirty miles distant. There are three alkaline lakes in the township on sections 3, 10, 9, 14 and 15. The only water I found fit for use was in a spring on the northeast quarter of section 9 near a lake on said section. There is very little hay land in the township, and no water-powers, minerals or stone quarries. The only game seen was antelope and ducks.—*David Beatty, D.L.S., 1907.*



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 7—Continued.*

28. This township may be reached by following a good graded road south from Lloydminster along the fourth meridian about thirty-two miles, crossing Battle river about thirty miles south of Lloydminster, thence by a fairly good trail to the east side of Sounding lake where there is a small detachment of mounted police, thence along the valley of Sounding creek about fifteen miles, thence leaving the valley and over rolling prairie to this township. The soil of this township is generally clay without any black soil on top and may be ranked as third class. The surface is rolling prairie without any timber or scrub. The nearest fuel that I know of is in the valley of a branch of Sounding creek coming in from the west about twenty-five miles distant. There is very little hay land in the township. I found no water, and was obliged to draw it from the south side of township 27, range 7, for my horses and camp use. There are no minerals or stone quarries. The only game seen was antelope.—*David Beatty, D.L.S., 1907.*

*Range 8.*

1 and 2. The best route for reaching this locality is by way of the police trail from Coutts, a station on the railway owned by the Alberta Railway and Irrigation company, in township 1, range 15. This trail leads directly to these townships and at the time of my visit (August) was in good condition. The soil on the uplands is generally a hard clay with a few patches that appear to be loamy, while in the valleys it is a clay or sandy loam very fertile but limited in quantity. The surface is very much broken by Milk river valley and by coulées leading into it, thus rendering travelling through these townships a rather difficult task. The only timber is in the valleys and coulées, and consists of willow and cottonwood of no great quantity or value. Hay was cut last summer in townships 1, ranges 8 and 9, in a number of places that had been fenced to keep stock away, but it was very short, averaging from six to eight inches. The only water of consequence is Milk river. It is fresh, but during the summer months becomes very low, and I am informed has at times ceased to run entirely. The bottom lands in the valley are liable to be flooded the extent and depth of the flooding depending entirely upon the season. There are no water-powers in this township. The climate is said to be equable with occasional summer frosts, but frequent and violent winds prevail through the entire locality. Both coal and wood are used for fuel in this township. They may be procured along the river and in several of the large coulées. Coal was dug by our party in section 36, township 1, range 9, and I was informed that in section 34 or 35, township 1, range 8, a vein had been opened by the settlers. Veins of weathered lignite were observed in several of the coulées in these townships, which would seem to indicate a very large supply of coal in this locality. There is an abundance of sandstone in the coulées. The harder varieties, which are easily obtained, make very good building material. No minerals of economic value were found by us in these townships. Coyotes, badgers, rattle snakes and a few prairie chickens were the only varieties of game noticed. There are several settlers and ranchers in these townships, and the Pend. d'Oreille Northwest Mounted Police post is situated on Milk river in township 2, range 8.—*A. H. Hawkins, D.L.S., 1907.*

3 and 4. The best route for reaching this locality is by way of the police trail from Coutts, a station on the railway owned by the Alberta Railway and Irrigation company, and situated in township 1, range 15. This trail leads directly past these townships, and at the time of my visit (August) was in good condition. The soil is a hard clay, but in places appears to be loamy. I think it is probably best adapted for cattle or sheep raising, except in the bottom lands of the Pend d'Oreille



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 8—Continued.*

coulée, where the soil seemed to be a very fertile clay loam, and where at the time of my survey there was a thick growth of blue-joint grass. This land would probably raise very excellent crops of hay or grain if cultivated, but the great drought to which this country is subject renders farming difficult. The surface is rolling prairie broken by Pend. d'Oreille coulée and the coulées entering it in the southern portion of township 3. No timber of any kind was seen in these townships. Hay might be cut in the coulées, but at the time of my visit thousands of cattle made the place a rendezvous. No water was crossed by the lines which I was directed to retrace in these townships. No water-powers, stone quarries or minerals of economic value were found in these townships. The fuel most easily obtained is coal, which may be dug in several of the coulées to the south of Milk river, although a small amount of wood along the river, chiefly small willows and cottonwood, is available for fuel on the river. The climate is said to be equable with occasional summer frosts, but frequent very high winds prevail throughout this locality. Coyotes, badgers, rattlesnakes and a few prairie chickens were the only varieties of game noticed.—*A. H. Hawkins, D.L.S., 1907.*

*Range 9.*

1 and 2. The best route for reaching this locality is by way of the police trail from Coutts, a station on the railway owned by the Alberta Railway and Irrigation Company, in township 1, range 15. This trail leads directly to these townships and at the time of my visit (August) was in good condition. The soil on the uplands is generally a hard clay with a few patches that appear to be loamy, while in the valleys it is a clay or sandy loam very fertile but limited in quantity. The surface is very much broken by Milk river valley and by coulées leading into it, thus rendering travelling through these townships a rather difficult task. The only timber is in the valleys and coulées, and consists of willow and cottonwood of no great quantity or value. Hay was cut last summer in townships 1, ranges 8 and 9, in a number of places that had been fenced to keep stock away but it was very short, averaging from six to eight inches. The only water of consequence is Milk river. It is fresh but during the summer months becomes very low and I am informed has at times ceased to run entirely. The bottom lands in the valley are liable to be flooded, the extent and depth of the flooding depending entirely upon the season. There are no water powers in this township. The climate is said to be equable with occasional summer frosts, but frequent and violent winds prevail through the entire locality. Both coal and wood are used for fuel in this township. They may be procured along the river in several of the large coulées. Coal was dug by our party in section 36, township 1, range 9, and I was informed that in section 34 or 35 township 1, range 8, a vein had been opened by the settlers. Veins of weathered lignite were observed in several of the coulées in these townships which would seem to indicate a very large supply of coal in this locality. There is an abundance of sandstone in the coulées. The harder varieties which are easily obtained, make very good building material. No minerals of economic value were found by us in these townships. Coyotes, badgers, rattlesnakes and a few prairie chickens were the only varieties of game noticed. There are several settlers and ranchers in these townships, and the Pend. d'Oreille Northwest Mounted Police post is situated on Milk river in township 2, range 8.—*A. H. Hawkins, D.L.S., 1907.*

3 & 4. The best route for reaching this locality is by way of the police trail from Coutts, a station on the railway owned by the Alberta Railway and Irrigation Company, and situated in township 1, range 15. This trail leads directly past these



## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 9—Continued.*

townships and at the time of my visit (August) was in good condition. The soil is a hard clay but in places appears to be loamy. I think it is probably best adapted for cattle or sheep raising, except in the bottom lands of the Pend. d'Oreille coulée, where the soil seems to be a very fertile clay loam, and where, at the time of my survey, there was a thick growth of blue-joint grass. This land would probably raise very excellent crops of hay or grain if cultivated, but the great drought to which this country is subject renders farming difficult. The surface is rolling prairie broken by Pend. d'Oreille coulée and the coulées entering it in the southern portion of township 3. No timber of any kind was seen in these townships. Hay might be cut in the coulées but at the time of my visit thousands of cattle made the place a rendezvous. No water was crossed by the lines which I was directed to retrace in these townships. No water-powers, stone quarries or minerals of economic value were found in these townships. The fuel most easily obtained is coal which may be dug in several of the coulées to the south of Milk river although a small amount of wood along the river chiefly small willow and cottonwood, is available for fuel on the river. The climate is said to be equable with occasional summer frosts but frequent very high winds prevail throughout this locality. Coyotes, badgers, rattlesnakes and a few prairie chickens were the only varieties of game noticed.—*A. H. Hawkins, D.L.S., 1907.*

60. This township is easily reached from St. Paul de Metis by the old Onion lake and Lac la Biche trail which crosses the southwest corner of the township, also by a less used trail branching off from the former trail and traversing sections 3, 10, 15, 14, 23, 26 and 35. The township is fairly well watered by creeks but there are few sloughs with the exception of those in sections 23, 22, 26, 34 and 35. Yelling creek runs across the township from west to east. It averages six feet wide and one foot deep and contains excellent water. Wood is generally plentiful except in Yelling Creek valley. The timber is chiefly poplar from two to eight inches in diameter. There is also a ridge of excellent building jackpine and some spruce and tamarack in sections 10, 11, 14 and 15. No mineral of economic value was found. Moose, caribou, bears and other fur bearing animals and ducks are plentiful, but there are very few chickens and no fish. The soil is excellent being a rich black loam fourteen inches in depth with a clay subsoil. The growth of peavine and grass is most luxuriant, and upland and slough hay could be cut in great quantities. The township is excellently adapted for mixed farming or stock raising. Early frosts are rare.—*M. W. Hopkins, D.L.S., 1906.*

*Ranges 10 and 11.*

1. The best route for reaching this locality is by way of the police trail from Coutts, a station on the railway owned by the Alberta Railway and Irrigation Company in township 1, range 15. This trail leads directly past these townships and at the time of my visit (August) was in very good condition. The soil is a hard clay, in places appearing to be loamy, and is, I think, best adapted for cattle or sheep raising. In the ravines the soil appears to be more fertile, and is a sandy or clay loam. The surface is very rolling prairie and is cut by several deep couleés or gulches, three of which are Bear creek, Breed creek and Miners' gulch, all leading from the Sweet grass hills to Milk river. Neither timber nor hay lands were found in this township. Water at the season in which I visited this locality was all supplied by springs which are fresh and good. I understand, however, that all three couleés carry considerable streams during the spring. There are no water-powers in this township. The climate is equable, and although summer frosts have been experienced they are not frequent. Violent winds, however, prevail here at all seasons of the year. Coal and wood are



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Ranges 10 and 11—Continued.*

both used for fuel. Coal is generally obtained from the vicinity of Gold Butte, a small town in the state of Montana, some twelve miles south of the international boundary. Wood is obtained in the Sweetgrass hills south of the boundary. No stone quarries or minerals of economic value were found. Several settlers have located along the south boundary of these townships, on the bottom lands and appear to be making a living. Two of them have small irrigation systems fed chiefly from springs.—*A. H. Hawkins, D.L.S., 1907.*

*Range 12.*

1. The easiest route for reaching this township is by a very good trail following the international boundary from Coutts, a station on the railway owned by the Alberta Railway and Irrigation Company, and distant about twenty-five miles. The soil is a clay or sandy loam, with patches of gravel and clay, but owing to the very dry seasons is probably best adapted for cattle or sheep raising. The surface is rolling prairie traversed by Milk river along the north boundary, and cut by several large and deep couleés running north and south, while several spurs from the Sweetgrass hills project into this township. There is neither timber nor scrub, except what is found in the valley of Milk river and in the larger couleés where occasionally a thick bunch of willow scrub, a clump of poplars or cotton wood, is met with. There are no haylands in this township. The only water of consequence is in Milk river which flows through the northern portion of the township. The water is fresh, but during the summer months the river is very low, and I was credibly informed that it had on several occasions entirely ceased to flow. I understand that the bottom lands of the valley are flooded during the spring freshets. There are no water-powers in this township. The climate during the summer months is warm and dry and is said to be equable throughout the year with occasional summer frosts, but this district is subject at all times to violent winds. Coal and wood are both used as fuel by the settlers. A small quantity of wood, chiefly dried willow brush, may be obtained in places along Milk river and in some of the couleés. Coal is procured from Coutts, but traces of it were observed on couleés crossed by the east boundary of sections 31 and 32, and it would require but little development to make it available. No minerals of economic value were observed, but sandstone may be obtained along the valley of Milk river, and in the larger couleés. It is easily procured and seems to be very good building material. Coyotes, foxes, badgers, a few beaver along Milk river and prairie chicken were the only varieties of game noticed. There are several settlers along the valley of Milk river.—*A. H. Hawkins, D.L.S., 1906.*

7. The surface is principally an undulating and level prairie. Chin couléé, about one hundred and fifty feet deep, cuts across the southwest corner of the township. In and along the sides of this couléé a great many surface stones are found. The water of the lake in this couléé is about ten inches deep and suitable only for cattle. The soil is principally clay loam with a mixture of sand and a stiff clay subsoil. The grass is not very strong in this township, possibly due to successive prairie fires. There are no hay lands of any value, no timber, no quarries and no indications of coal or other minerals within the township.—*C. A. Magrath, D.L.S., 1907.*

8. This township varies from level to gently rolling prairie. Surface water, the result of some recent heavy rains, was available in a few small sloughs. Some surface stones are to be seen in the eastern portion of the township. The soil consists of a



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 12—Continued.*

sandy and clay loam with a clay subsoil and supports a fair growth of grass. There are no hay lands of any value, no timber, no quarries and no indications of coal or other minerals within the township.—*C. A. Magrath, D.L.S., 1907.*

*Range 13.*

2. The best road to reach this township is along the very excellent trail used by the Royal Northwest Mounted Police officers from Coutts, a station on the railroad owned by the Alberta railway and Irrigation company, in township 1, range 15 and distant about ten miles. The soil is a clay or sandy loam with patches of clay and gravel, but owing to the very dry seasons this locality is probably best adapted for sheep or cattle raising. The surface is rolling prairie, the southwestern portion being traversed by Milk river. The only timber found is in the valley of this river consisting chiefly of willow, cottonwood and poplar in very limited quantities. There were no hay lands observed in this township. The only water of consequence is Milk river, the water of which is fresh. During the summer months it is very low and has ceased to flow on several occasions. The bottom lands along the valley are subject to flooding during the spring freshets, the depth varying with the season. There are no available water-powers. The climate is equable with occasionally a summer frost but this entire locality is subject to very strong winds. Coal is the fuel most readily available and may be procured at Coutts. A small quantity of wood is found on Milk river, consisting chiefly of small dry willows. Sandstone in unlimited quantities may be obtained on Milk river and is of sufficiently good quality to be used as building material. No minerals of economic value were noticed. Coyotes, foxes, badgers, a few beavers and prairie chicken were the only game seen in this township. There are two settlers in the township, both of whom devote their attention to raising cattle and horses rather than farming.—*A. H. Hawkins, D.L.S., 1906.*

8. The surface of this township varies from level to gently rolling prairie. Some depressions or coulees occur in the southern portion of the township and surface stones are found in some of these coulees. The soil is a clay and sandy loam and has a depth of from 8 to 12 inches. There is a fair growth of grass in the township. Water, from recent heavy rains, was available in some small sloughs. There are no hay lands of any value, no timber, no quarries and no indications of coal or other minerals within the township.—*C. A. Magrath, D.L.S., 1907.*

65. The township is crossed from section 3 to section 31 by the public road going to Lac la Biche. The soil consists of a layer of black loam averaging five to six inches with a subsoil of clay or sandy clay, with stones in several places. The soil of about one-half of the quarter sections is first class, while that of a great part of the rest is second class. The township is fairly good for farming. It is well timbered, except a strip that extends from section 31 to section 1 consisting of open spots, or brush and small poplar. The timber is mostly poplar. In places cottonwood and birch are met with. Spruce and tamarack are seen only in small bunches, on more than one-third of the section lines, especially in the north and west of the township. The open spots seen in sections 29, 30, 31 and 32 give a limited supply of prairie hay. Slough hay is cut mostly around Hay lake. All the hay cut in the township will not amount to more than a few hundreds of tons. The water in the lakes is not fit to drink. That of Little Beaver creek is good. This creek traverses section 31. It nearly ran dry in the summer of 1906. Lacroix lake could be used to generate water-power in the spring, but in dry summers very little water flows out of it. The climate appears to be a little colder than that of Edmonton, although the winter of 1906-1907



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 13—Continued.*

was somewhat milder here than in many parts of Alberta. Dry wood is the most readily available fuel, as no coal is known to exist in the township. No stone quarries nor minerals were observed. Moose were plentiful during the winter of 1906-1907 in the western part of the township. Lynx, coyotes and foxes are found in the township.—*Raoul Rinfret, D.L.S., 1906.*

66. The township is crossed by the public road going to Lac la Biche, which goes through sections 6, 7, 18, 30 and 31. The soil consists of a layer of black loam, averaging about four inches, with a subsoil of sandy clay, and sandy clay and stones in several cases. The soil of over one-half of the sections is second class. Although there are some good homesteads to be found in the township, I do not consider that it is good for farming, speaking generally. The township is well timbered, except the southwest portion, where there are open spots. The timber consists of poplar, there being but little spruce. The southeasterly part of the township is heavily rolling, and the remainder ordinarily rolling. There is some fine spruce in section 13, and in a couple of islands in sections 22 and 27. The spruce met with in the rest of the township is only in small bunches south of Beaver lake. There is not much hay cut. The only hay areas are in sections 3 and 4, the amount cut probably not exceeding fifty tons. The water of Beaver lake is very good, the outlet of which is called 'Little Beaver.' Although high in the spring it gets very low in dry summers. Beaver lake could be used to generate water-power. The lake is said to be some ten miles long and a dam built at the outlet would store a great quantity of water. The climate would be a little colder than that of Edmonton, although the winter of 1906-1907 was somewhat milder than in many parts of Alberta. Dry wood is the most readily available fuel as there is no coal found in the township. No stone quarries nor minerals occur. Duck are plentiful on the lakes of this township. Lynx, coyote and fox are not uncommon. *Raoul Rinfret, D.L.S., 1906.*

*Range 14.*

1. The best route for reaching this township is by a very good trail following the international boundary from Coutts, a station on the railway owned by the Alberta Railway and Irrigation Company, situated in township 1, range 15, and distant six or seven miles. The soil is clay or sandy loam with patches of gravel and clay, but owing to the very dry seasons it is probably best adapted for cattle or sheep raising. The surface is rolling prairie and the southeast portion is broken by a rocky spur from the Sweetgrass hills. There is neither timber nor scrub in any portion of the township. There are no hay lands and there was very little water at the time of my survey (September). The climate is equable, but occasionally summer frosts are experienced and this locality is subject at all times to violent winds. Coal is the fuel most easily procured and may be obtained at Coutts. No traces of it were noticed in this township. There are no stone quarries and no minerals of economic value. A few coyote, badger and foxes were the only varieties of game seen. No settlers have yet located in this township, although on several occasions inquiries were made as to when it was to be subdivided.—*A. H. Hawkins, D.L.S., 1907.*

2. The best road to reach this township is along the very excellent trail used by the Royal Northwest Mounted Police officers from Coutts, a station on the railroad owned by the Alberta Railway and Irrigation Company in township 1, range 15, and distant about ten miles. The soil is a clay or sandy loam with patches of clay and gravel, but owing to the very dry seasons this locality is probably best adapted for sheep or cattle raising. The surface is rolling prairie, the southwestern portion being



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 14—Continued.*

traversed by Milk river. The only timber found is in the valley of this river consisting chiefly of willow, cottonwood and poplar in very limited quantities. There was no hay lands observed in this township. The only water of consequence is Milk river, the water of which is fresh. During the summer months it is very low and has ceased to flow on several occasions. The bottom lands along the valley are subject to flooding during the spring freshets, the depth varying with the season. There are no available water-powers. The climate is equable with occasionally a summer frost, but this entire locality is subject to very strong winds. Coal is the fuel most readily available and may be procured at Coutts. A small quantity of wood is found on Milk river, consisting chiefly of small dry willows. Sandstone in unlimited quantities may be obtained on Milk river and is of sufficiently good quality to be used as building material. No minerals of economic value were noticed. Coyote, fox, badger, a few beaver and prairie chicken were the only game seen in this township. There are two settlers in the township, both of whom devote their attention to raising cattle and horses rather than farming.—*A. H. Hawkins, D.L.S., 1906.*

33. The best route for reaching this township is by a good wagon trail, which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to Hunt's ranch in section 17, township 34, range 15, from there it is ten miles across prairie to the centre of this township. The soil consists of two to six inches of sandy loam with a hard sandy clay or clay subsoil, and should be described as being between second and third class. It is suitable for ranching purposes and to a lesser degree for mixed farming. The surface is generally undulating or rolling prairie, but in the south of this township the surface is rolling or steeply rolling. There is no timber of any description. Small hay meadows are scattered all through the township. Water is rather scarce in this township, there are two permanent lakes one in section 29 being six feet deep and containing fresh water, the other in section 1, being four feet deep and alkaline. There are two small creeks of fresh water running through this township which were almost dry at the time of survey (October), but there were pools of fresh water all along their beds. No water-power can be developed. The climate is similar to the Stettler district, summer frosts being rare. Coal for fuel can be obtained in this township in section 36, there is a small seam about 18 inches thick, where ranchers have already commenced mining it, and in sections 11 and 13 there are outcroppings of a small seam. Wood for fuel is very scarce and the nearest obtainable in any quantity is from the Handhills about thirty miles south. There is no stone or mineral. Antelope in small numbers is the only kind of game.—*R. H. Cautley, D.L.S., 1907.*

34. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to Hunts' ranch in section 17, township 34, range 15, from there it is twelve miles across prairie round the south end of Sullivan lake, to the centre of this township. The soil consists of three to four inches of sandy loam with a hard sandy clay or clay subsoil and should be described as being between second and third class. It is suitable for ranching purposes and to a lesser degree for mixed farming. The surface is undulating prairie. There is no timber of any description. Small hay meadows are scattered all through the township. Sullivan lake, which takes up one-third of this township, is very shallow in most places, and the water is slightly alkaline and very muddy, a great quantity of a fine whitish clay being held in suspension. Several small fresh water springs flow into the lake in this township and water should be easily obtained by digging wells. No water-power can be developed. The climate is similar to the Stettler district, and summer frosts are rare. Coal for fuel can be obtained just south



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 14—Continued.*

of this township, and also in the township just north of it. Probably this township also contains coal. Wood for fuel is very scarce and the nearest obtainable in any quantity is from the Handhills thirty to thirty-five miles south. There is no stone or mineral. Antelope in small numbers is the only kind of game.—*R. H. Cautley, D.L.S., 1907.*

67. The township is reached by the road which follows the south side of Lac la Biche. This road passes through sections 14 and 15. The soil consists of a layer of black loam averaging from five to six inches with a subsoil of clay, sandy clay and in a few cases sandy clay with stones. The soil generally is second class and is fairly good for agriculture. The township is timbered, with a few small open spots in the western part. The timber consists mostly of poplar with patches of fairly large spruce and tamarack. These patches are pretty well scattered throughout the township. Spruce is not found in great quantities. Slough hay can be cut on the west side of Little Egg lake in several places, and some prairie hay in the southwest corner of the township. The water of Little Egg lake is good, but that of the other lakes is likely not fit to drink. The only stream of any importance is the outlet of Little Egg lake. The only water-power that could be obtained would be by damming the outlet of Little Egg lake, which might furnish some power in wet summers. The climate is somewhat colder than that of Edmonton. The most readily available fuel is dry wood. There are no stone quarries nor minerals in this township. There is but little game, as the township is near Lac la Biche settlement.—*Raoul Rinfret, D.L.S., 1906.*

68. There is no wagon road reaching the township, but there is one to township 68, range 13. The township can also be reached by crossing Lac la Biche from its south shore, where there is a wagon road. The soil consists of a layer of black loam, averaging six inches, with a subsoil of sand in the eastern part of the township and of clay or sandy clay in the western part. The western half of the township is good for farming. The eastern half consists of a layer of black loam four inches thick with a subsoil of sand, and would not be good for farming. The township is well timbered throughout. There is a large quantity of spruce and jackpine in the northern part of the township, with bunches of fine spruce of small extent. In the southern part of the township there are bunches of poplar and poplar mixed with spruce. Slough hay can be cut on the shore of Lac la Biche, but only in small quantities. The water in Lac la Biche is very good. There are no streams of importance in the township and consequently no water-powers. The climate is somewhat colder than that of Edmonton. The most readily available fuel is dry wood. There are no stone quarries nor minerals. Lynx, fox and coyote are common. Caribou and moose are likely to be found in the township.—*Raoul Rinfret, D.L.S., 1906.*

*Range 15.*

29. The route to this township is by trail from Stettler or Gleichen. The trail from Stettler is not so hilly as the other, but both are in good condition. Clay soil, in varying forms of consistency is found throughout. The surface is prairie without any timber. Two-thirds of the township is very hilly, while the balance is rolling. Handhills lake covers a considerable part of sections 6, 7, 18 and 19. This lake is in places over fifteen feet deep and was at one time much larger than at present, the level having fallen fully twenty feet. It has now no outlet, and only some very small creeks flowing into it. The water is very soapy, probably due to the presence of soda. There are no hay areas of any large extent. The nearest present available fuel supply is about ten miles distant, but it is quite likely coal will be found in this township.



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 15—Continued.*

Some was found in the pits on the north boundary of section 31. There are no stone quarries or minerals of economic value. Duck, geese and prairie chicken were seen in considerable numbers. The soil produces excellent grass, and there are springs and sloughs where good water is to be had, making this a good location for ranching, but the surface is too rough for agricultural purposes.—*Geo. Edwards, D.L.S., 1907.*

30. This township is accessible by trail from Stettler or Gleichen, the distance either way being about the same, and the trails being in good condition. The soil is chiefly clay, producing good grass and suitable for ranching purposes. The surface is prairie without any timber. There is some rolling land in the northeast quarter of the township, but fully two-thirds of the area is very hilly. There are no hay sections of any considerable extent. Water is to be found only in a few sloughs. There are no streams. The climate is good. There does not appear to be any special danger from summer frosts. There is no apparent fuel supply in the township. Coal is obtainable in the next adjoining township south. There are no stone quarries or minerals of economic value. No game was to be seen. The township is suitable for ranching, but too rough for agricultural purposes.—*Geo. Edwards, D.L.S., 1907.*

33. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to Hunts' ranch in section 17, township 34, range 15, some three miles across prairie from the north boundary of this township. The soil consists of three to four inches of sandy loam over a hard sandy clay or clay subsoil, and should be described as third class, it is suited only for ranching purposes, as the surface is steeply rolling prairie. There is no timber of any description but a few small hay meadows scattered all through the township. Water is very scarce; a few small fresh water ponds which are liable to dry up in summer are to be found and there are two small springs in the west part of the township. No water-power can be developed. The climate is similar to that in the Stettler district and summer frosts are rare. Coal for fuel can be obtained in the adjoining townships north and east. Wood for fuel is very scarce, the nearest obtainable in any quantity being from the Hand hills, which are about thirty miles south. There is no stone or mineral. Antelope in small numbers is the only kind of game.—*R. H. Cautley, D.L.S., 1907.*

34. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to Hunts' ranch in section 17 of this township, a distance of fifty-five miles roughly. The soil consists of three to six inches of sandy loam over a hard sandy clay or clay subsoil, and should be described as second class in the north part of the township and between second and third class in the south four miles, where it is very rolling. This would make a good ranching locality and the north part is suitable for mixed farming. The north part of the township is undulating and the south four miles is rolling or steeply rolling prairie. There is no timber of any description. Small hay meadows are scattered all through the township. Sullivan lake, which extends the whole length of this township, on the east sides, is very shallow in most places, the water is slightly alkaline and very muddy, a great quantity of fine whitish clay being held in suspension. There is another permanent lake called Hunt lake in sections 22 and 27, which is also alkaline and muddy. Fresh water is rather scarce though there are a few ponds and a large fresh water spring in section 17, which forms a small creek which flows into Hunt lake. No water-power can be developed. The climate is similar to that in Stettler district and summer frosts are rare. Coal for fuel can be obtained in the northeast quarter of section 34 of this township where there is a one foot seam of



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 15—Continued.*

good lignite coal overlaid by two feet of soft brown lignite. Wood for fuel is very scarce, a small amount of dry willow can be obtained around sloughs and ponds. There is no stone or mineral. Antelope in small numbers is the only kind of game.—*R. H. Cautley, D.L.S., 1907.*

66. There is a road from section 33 connecting with the road going through the settlement of Lac la Biche. The soil is fairly good for agriculture, half the sections being first class soil and the greater part of the rest second class. Nearly one-half of the township is covered by lakes, while the remainder is wooded. Spruce is met with in great quantities in the southern and southwestern parts of the township. There are many places where very big spruce are seen. Fine spruce are also found in the northeast corner of the township. The rest of the timber is mostly poplar. Spots of small poplar and willows are not uncommon. The southern part of the township is well timbered with fine spruce. Slough hay can be cut in certain bays of Big Egg lake and south of lake Tremblay. The hay is principally along the northwest end of Big Egg lake. The water of the big lakes is good. There is no stream of importance, except the outlets of Tawakwato and Long lakes. The only water-power which could be developed would be on the outlets of the two last named lakes, by damming up the lakes, although there is very little difference of level, apparently, between Tawakwato and Big Egg lakes. The climate is somewhat colder than that of Edmonton. The most readily available fuel is dry wood, as there is no coal found in the township. There are no stone quarries, nor minerals known. Moose was very plentiful in the south and southwest parts of the township. Fresh tracks and poplar with the bark partly eaten were numerous. The only other game was lynx and foxes.—*Raoul Rinfret, D.L.S., 1906.*

67. This township is reached by roads coming from Lac la Biche settlement. The soil consists of a layer of black loam averaging seven inches on a subsoil of clay or sandy clay, and in a few cases of sand and stones. The soil of the quarter sections is mostly first or second class and is suitable for agricultural purposes. The township is timbered in the southern part while there are open patches in the northern part. The timber is mostly poplar and willow. Spruce is found only in small patches throughout the township. In many places there is only small poplar. In many open spots several hundred tons of prairie and slough hay is cut every year. The water in the lakes of this township is not fit to drink, except that in Big Egg lake. There are no streams of any consequence nor is there any water-power. The climate is colder than that of Edmonton. Wood is the most readily available fuel, as there is no coal found in the township. There are no stone quarries nor minerals, but lynx and foxes are common, while good fish is abundant in Lac la Biche.—*Raoul Rinfret, D.L.S., 1906.*

68. The route by which to reach this township is along the road which follows the south side of Lac la Biche and crosses section 7. The whole township consists of about three sections. The soil belongs to classes one and two, being fairly good for agriculture. The surface is timbered, with spruce in section 31 and poplar in the other sections. Some slough hay might be obtained in section 31.—*Raoul Rinfret, D.L.S., 1906.*

*Range 16.*

29. The route to the township is by trail from Stettler or Gleichen. The distance is about the same either way. The trails are in good condition. The soil is chiefly clay loam with gravel or clay subsoil, and it is well adapted for general farming.



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 16—Continued.*

Good upland hay covers nearly half the township. Handhills lake takes up about four square miles of the area. This lake has fallen fully twenty feet within a few years. It formerly was the source of Bullpound creek but there is now no outflow of water. There are a few very small creeks flowing into the lake. The water appears to contain considerable soda, giving it a very soapy appearance and taste. There is a large pool of good water on the east side of the lake, separated from it only by a narrow bar. There are several springs of good water among the hills. The climate is good, summer frosts do not seem to be prevalent. There is no fuel within the township but coal is obtainable within 15 miles both east and west. There are no stone quarries or minerals of economic value. Geese, duck and prairie chicken were plentiful. This township is at present occupied by eight or ten ranchers none of whom have done anything in the way of agriculture. Fully seventy-five per cent of this township would make good farms.—*Geo. Edwards, D.L.S., 1907.*

30. This township can be most conveniently reached by trail from Stettler. The trail is in good order. The soil is chiefly clay or clay loam with gravel subsoil, suitable for general agricultural purposes. The surface is prairie with no timber. There are no large hay meadows, but a considerable portion of the township produces good upland grass which is used for fodder. There are a few small streams and several springs of good water. Bullpound creek traverses this township. It was formerly the outlet of Handhills lake, and a stream of considerable volume, but owing to the level of the lake falling about twenty feet, there is no longer any flow of water from it, and the creek is now merely a chain of pools. The climate is favourable and no special danger of summer frosts. There is coal obtainable near the west boundary of the township in township 30, range 17. There are no stone quarries or minerals of economic value. Duck and prairie chicken were seen. Fully one-half of the township is rolling, or nearly level, and the quality of the soil seems to be excellent for farming purposes. The balance is good grazing land but rather too rough for agricultural purposes.—*Geo. Edwards, D.L.S., 1907.*

33. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to Shellberg's ranch in section 29, of this township, via the south end of Gough lake, a distance of fifty-three miles, roughly. The soil consists of six to eighteen inches of sandy loam in the west half of the township and of three to six inches of sandy loam in the east half, over a sandy clay or clay subsoil. There is some first class land adjoining Farrell lake and all the west half of the township may be described as second class, and suitable for mixed farming. In the east half of the township the soil is not so good and should be described as being between the second and third class suitable for ranching purposes or to a lesser degree for mixed farming. The surface is gently rolling prairie with no timber of any description. There is a large hay meadow on the east boundary of section 32, where fifty or sixty tons of hay can be cut and there are several small hay meadows scattered through the township. Water is fairly plentiful, being supplied by five large lakes including Farrell lake and two small lakes, all of which except Farrell lake are slightly alkaline. Farrell lake which enters this township in sections 30 and 31 is about eight feet deep and the water is fresh although rather milky in appearance owing to some white salt which is held in suspension although cattle like it very much. The other lakes are all shallow and the water is both slightly alkaline and thick owing to some salt in suspension. There are



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 16—Continued.*

also several freshwater springs near the edges of the lakes. No water-power can be developed. The climate is similar to that of the Stettler district and summer frosts are rare. Coal for fuel is obtainable about ten miles to the south of this township but wood is very scarce, the nearest obtainable in any quantity being from the Handhills which are about thirty miles south. There is no stone or mineral and no game.—*R. H. Cautley, D.L.S., 1907.*

34. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to Spiers' ranch in section 16, of this township via the south end of Gough lake, a distance of fifty miles roughly. The soil consists of two to six inches of sandy loam over a hard sandy clay or clay subsoil. In sections 35 and 36 there is some first class land, the soil being deep and the surface level and there is quite a strip of fairly level prairie on the edge of this township which should be described as second class and suitable for mixed farming, but the largest part of the township is steeply rolling prairie and only suitable for ranching purposes. There is no timber of any description. Small hay meadows are scattered all through the township. Water is plentiful there being six permanent lakes, three of which are slightly alkaline and the others fresh, also there are four large freshwater springs in different parts of the township and numerous ponds, some of which are slightly alkaline but most of which are fresh. No water-power can be developed. The climate is similar to that of the Stettler district and summer frosts are rare. Coal for fuel can be obtained in the adjoining township east but wood for fuel is very scarce, the nearest obtainable in any quantity being from the Handhills which are thirty to thirty-five miles south. There is no stone or mineral and no game.—*R. H. Cautley, D.L.S., 1907.*

*Range 17.*

33. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to the Handhills and enters this township in section 30 leaving it in section 4. The soil consists of three to six inches of sandy loam over a sandy or sandy clay subsoil except in the west two miles of the township where the subsoil is more of a gumbo nature. The east part of the township should be described as second class although there is some land adjoining Farrel lake which may be called first class and is suitable for mixed farming, but the west two miles is more suitable for ranching purposes. The surface is gently rolling in character, and there is very little brush except for a narrow strip along the south shore of Farrell lake where there is some small grey willow. There is no timber of any description. There are small hay meadows scattered all through the township and three or four hundred tons of upland hay can be cut in sections 25, 26 and 27, along the edge of Farrell lake. Water is fairly plentiful, there being five permanent lakes, two of which are slightly alkaline and milky in appearance, the others including Farrell lake are fresh water. Farrell lake stretches right across this township from east to west, and averages about three quarters of a mile in width, it is about eight feet deep and the water is fresh although rather milky in appearance owing to some white salt which is held in suspension although cattle like it very much. There are also two spring-fed creeks which run into Farrell lake and which have deep pools of water along their course. No water-power can be developed. The climate is similar to that in the Stettler district, and summer frosts are rare. Wood for fuel is very scarce, but coal can be obtained about fifteen miles southeast of the township. There is no stone or mineral and no game.—*R. H. Cautley, D.L.S., 1907.*



## TOWNSHIPS WEST OF THE FOURTH MERIDIAN

*Range 17—Continued.*

34. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway via the south end of Gough lake and passes through this township, entering it in section 30 and leaving it in section 1. The soil consists of three to six inches of sandy loam over a hard sandy clay or clay subsoil and should be described as second class, except in the south part of the township, where, owing to the hilly nature of the country, it should be described as between second and third class. The north four miles of the township are suitable for mixed farming and the south two miles would make good ranching country. The north four miles of this township are gently rolling to rolling prairie, and the south two miles are rolling to steeply rolling prairie and there is considerable grey willow brush around the edges of sloughs and pounds. There is no timber of any description. There are numerous small hay meadows scattered all through the township. The supply of water is abundant, there being thirteen permanent lakes in this township, including part of Farrell lake, all of which are fresh water except No. 3, in which the water is slightly alkaline and very milky in appearance, owing to some white salt held in suspension. Besides these lakes there are numerous fresh water ponds, scattered all through the township. No water-power can be developed. The climate is similar to that in the Stettler district and summer frosts are rare. Wood for fuel is to be found in small quantities around ponds and sloughs, where there is a grey willow from two to three inches in diameter. There are no coal or lignite veins in this vicinity. There is no stone or mineral, and no game in the township.—*R. H. Cautley, D.L.S., 1907.*

*Range 18.*

29. The best route for reaching this township is either from Gleichen to Percieville on the Red Deer river across the government ferry and thence to the township by the trail over the Handhills, or from Stettler to the Imperial ranch in township 33, range 18, and thence across the prairie. Both trails are very good, but the latter obviates the river crossing and the high hills close to the river. The soil is usually a good loam suitable especially for grazing and mixed farming. The surface is open prairie, with no timber nor hay of any value. The water in Michichi and Willow creeks is good, but the supply is limited, both streams drying up in the summer. A few springs on the east boundary give a permanent supply in their immediate locality. There is no water-power available. Some frosts occur in June, July and September. The climate is similar to that of the district north of Gleichen. Coal is found in the surrounding townships east and west, but no coal or lignite was found in this township. There are no stone quarries and no minerals of economic value as far as observed. No game was seen in this township. The dipping station for the district north of Red Deer river is on the east boundary of this township.—*C. C. Fairchild, D.L.S., 1907.*

30. This township is best reached from Stettler over a good trail via Imperial ranch. The soil is clay with spots of black loam and gumbo suitable for ranching. The surface is prairie with no timber of any value and no hay. The water in Michichi creek is good but the supply is not sufficient as the creek goes dry in both branches in a dry season. The lake shown on the east boundary of section 31 is alkaline. There is no water-power available. The climate is rather drier than the surrounding district, and at present subject to summer frosts. No coal was found in the township, but it is easily obtained from Michichi creek to the west or in the Handhills to the southeast. There is no stone quarry in the township and no eco-



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 18—Continued.*

conomic minerals were observed. No game was seen in this township.—*C. C. Fairchild, D.L.S., 1907*

31. The township is best reached by trail from Stettler over a good trail via Imperial ranch. The soil is chiefly clay and a gumbo suitable for ranching. The surface is open prairie with no timber. About 300 acres of coarse hay is found in the southwest corner on the north boundaries of sections 31 and 32. Water in spring is good, but the creeks are alkaline and run dry in summer. A spring in section 29 is the only permanent supply. There is no water-power in this township. The climate is dry with some summer frosts. There are no coal or lignite veins in the township, but coal is found in Michichi creek to the southwest. No stone quarries or minerals of economic value were observed. No game was seen in this township.—*C. C. Fairchild, D.L.S., 1907.*

32. This township is most conveniently reached by trail from Stettler; the trail is good. The soil is chiefly clay and gumbo, and is suitable for ranching. The surface is open prairie with no timber. A coarse hay slough on section 20 contains about one hundred acres. There are no creeks with running water, and no water-powers. The climate is dry with some summer frosts. No coal, lignite, stone quarries or minerals of economic value were observed. No game was seen in this township. There was no water fit for camp use in this township and this survey was made from a camp in township 31, range 18.—*C. C. Fairchild, D.L.S., 1907.*

33. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to the Handhills and which passes through sections 35, 36, and 25 of this township. There is also a trail which branches off the above mentioned trail in township 34, range 18, and runs to the Gopher Head ranch in section 32 of this township. The soil consists of three to six inches of sand loam over a sandy clay or clay subsoil, and should be described as being between second and third class; part of this township is suitable for ranching purposes. The country is gently rolling prairie, and there is very little brush except in the extreme westerly part of the township, where there is some grey willow from two to three inches in diameter. There is no timber of any description. There are small hay meadows scattered all through the township. Water is rather scarce, there being only two permanent lakes, including Farrell lake, which just enters the northeast corner of this township and which is fresh water, the other lake in section 21 is slightly alkaline and rather milky in appearance. There is a spring fed creek which flows through this township into Farrell lake which has pools of water along its course, and there is a good fresh water spring in section 32. No water-power can be developed. The climate is similar to that of the Stettler district, and summer frosts are rare. Wood for fuel can be obtained in small quantities in the west part of this township and the township west of it where there are scattered clumps of gray willow from two to three inches in diameter. There are no lignite veins, coal, stone or mineral, and there is no game.—*R. H. Cautley, D.L.S., 1907.*

34. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to the Handhills and which passes through this township, entering it in section 31 and leaving it in section 2. Another branch of this trail, which runs east of Farrell lake, enters this township in section 34 and leaves it in section 25. There is also a good trail running to the Gopher Head ranch, in township 33, range 18, which branches off the first mentioned trail in section 19, and leaves the township in section 5. The soil consists



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 18—Continued.*

of from three to nine inches of sandy loam over a sandy clay or clay subsoil, except in the extreme north part of the township where the subsoil is largely gumbo. The land may be described as being between second and third class. Part of this township is suitable for mixed farming and it is all suitable for reaching purposes. The surface is gently rolling to rolling prairie in the south part of the township and level or undulating prairie in the north two miles and there are scattered clumps of gray willow from two to three inches in diameter with small poplar in the south half of the township. There is no timber of any description, but there are small hay meadows scattered all through the township, and there are large hay marshes in sections 29, 30, 31, and 32, where about seven hundred tons of very poor quality hay can be cut, the hay in these marshes being thin and largely fox-tail. Water is plentiful in the south half of the township where there are numerous ponds, most of which are fresh water. But in the north half of the township water is very scarce. There are two permanent lakes, including a small part of Farrell lake, which is fresh water, the other lake being slightly alkaline and milky in appearance. No water-power can be developed. The climate is similar to that of the Stettler district and summer frosts are rare. Wood for fuel can be obtained in small quantities in the south half of this township, where there is some dry willow from two to three inches in diameter. There are no lignite veins, coal, stone or mineral. There is no game.—*R. H. Cautley, D.L.S., 1907.*

*Range 19.*

29. This township is most easily reached from Gleichen via Rosebud creek over a good trail. The soil is generally a heavy clay loam suitable for mixed farming. The surface is rolling prairie, but Michichi creek cuts through the township in the bottom of the coulée from one hundred and fifty to two hundred and fifty feet deep. There is considerable scrub and some timber suitable for fencing along the coulée bottom and sides. A considerable quantity of upland hay is cut in the township every year, aggregating to about one thousand ton. The water in Michichi creek is very good, but it dries up in the summer season, only a few springs being left, which furnish sufficient water the year around. There is no water-power. The climate is rather dry and summer frosts were observed in June and July. Coal is found in the township along Michichi creek in considerable quantities. There are no stone quarries in the township and no economic minerals were observed. A few deer were seen in the creek bottoms and duck in the sloughs.—*C. C. Fairchild, D.L.S., 1907.*

30. This township is most easily reached from Stettler over a good trail. The surface is generally rolling prairie and there is no timber. The soil is clay loam suitable for mixed farming. There is about two hundred acres of slough hay in the township. The water in Michichi creek is fair, being slightly alkaline and the creek dries up in the summer, leaving water in holes only. There is no danger of flooding and no water-power. The climate is dry with some summer frost in June and July. Coal is found in abundance in the township south of this, and although none was seen in this township, I think it will be found here also. There are no stone quarries and no economic minerals. A few antelope were seen in this township.—*C. C. Fairchild, D.L.S., 1907.*

31. This township is best reached from Stettler over a good trail. The soil is clay loam, generally suited for mixed farming, with light sandy soil in the north-western part of the township. There is no timber of any value and no hay. The water in Michichi creek is very good, but the creek dries up in the summer. The sloughs are alkaline. There is no danger of floods, and no water-power. The clim-



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 19—Continued.*

ate is rather dry and summer frosts were observed in June and July. Coal is obtainable to the south and west along Red Deer river and Michichi creek. No coal or lignite was found in the township. There are no stone quarries and no economic minerals. A few antelope were seen.—*C. C. Fairchild, D.L.S., 1907.*

33. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to the Gopher Head ranch in section 32, township 33, range 18, one and one-half miles across prairie from the east boundary of this township. The soil consists of from two to six inches of sandy loam over a sandy clay or clay subsoil, and should be described as third class land owing to the hilly nature of the country, except for a few quarter sections in sections 17, 18, 19 and 20, which being fairly level may be called second class. This township is suitable for ranching purposes. The surface is steeply rolling prairie and there are scattered clumps of gray willow from two to three inches in diameter, with some small poplar all through the township. There is no timber of any description, but there are small hay meadows scattered all through the township. Water is plentiful, as there are numerous deep fresh water ponds all through the township, especially in the north half. No water-power can be developed. The climate is similar to that of the Stettler district and summer frosts are rare. Wood for fuel can be obtained in small quantities all through the township. There are no lignite veins, coal, stone or mineral. No game is found.—*R. H. Cautley, D.L.S., 1907.*

34. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway to the Handhills, and which passes through section 30 of township 34, range 18, three-quarters of a mile across prairie from the east boundary of this township. The soil averages from three to six inches of sandy loam, over a sandy clay or clay subsoil and must be described as third class owing to the hilly nature of the country; it is suitable for ranching purposes. There are a few quarter sections in the northeasterly part of the township which are fairly level and may be called second class, which are suitable for mixed farming. The surface is generally steeply rolling prairie, with scattered clumps of gray willow from two to three inches in diameter and some small poplar. There is no timber of any description, but there are small hay meadows scattered all through the township. Water is plentiful, there being numerous fresh water ponds all through the township. No water-power can be developed. The climate is similar to that of the Stettler district and summer frosts are rare. Wood for fuel can be obtained in small quantities all through the township. There are no lignite veins, coal, stone or mineral. No game is found.—*R. H. Cautley, D.L.S., 1907.*

66. The pack trail from Athabaska Landing to Lac la Biche crosses this township on sections 30, 29, 28, 27, 26 and 25 and was opened for wagons by me as far as section 27. It is a good trail though rough in places. Black loam and clay subsoil prevails in the twelve northern sections but the southern part of the township is generally covered with swamps and muskeg, though patches of fairly good land are found all through it. It is suitable for mixed farming. The surface is all covered with a growth of spruce, poplar and willow mostly dry. There is no timber of any value. About fifty tons of hay can be cut on the south of sections 4 and 5. There is an ample supply of fresh water from lakes on sections 17, 22, 26, and also from Flat lake on sections 6, 7 and 18. Flat lake creek is a stream about fifty links wide by one foot deep and flows in sections 8, 19, 30 and 31 where it joins Pine creek. No land is liable



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

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*Range 19—Continued.*

to be flooded. There is no water-power, and no indication of summer frost. Wood as fuel can be obtained on every quarter section. There is no lignite visible in the township. There are no stone quarries, nor minerals of economic value in sight in the township.—Game is scarce.—*J. L. Cote, D.L.S., 1907.*

67. (*East outline*).—The soil is very fair along sections 36, 25 and 24. Pine creek crosses the line on section 25 and a lake is struck on section 24 which is about three miles long by one wide. There is a large supply of fresh water but there is no water-power. The climate is good and there is no summer frost. The country is all wooded with poplar and spruce, but there is no timber of any value. There are no stone quarries nor any mineral of value.—*J. L. Cote, D.L.S., 1907.*

68. (*East outline*).—Swamps seem to cover a large percentage of this country with the exception of a few ridges of sandy soil.—*J. L. Cote, D.L.S., 1907.*

*Range 20.*

29. This township is best reached from Gleichen on the main line of the Canadian Pacific railway, via Rosebud creek. The trail is very good except the last ten miles which is very rough. The soil in the river bottom is generally hardpan or sand and unsuitable for farming. On the top of the high bank is a heavy clay loam suitable for mixed farming. The surface is generally prairie with small clumps of timber along each side of Red Deer river and in the bottom of Michichi creek coulées. The timber is cottonwood averaging about eight inches in diameter but not in sufficient quantities to supply the wants of the settlers. There is no hay in this township. There is plenty of good fresh water in Red Deer river and Michichi creek. Red Deer river averages about five chains in width, three feet in depth with a current of two and one-half miles an hour at low water. Michichi creek for the most part dries up in summer time. There is little danger of flooding. There is no water-power available. One or two frosts were observed in June but the climate is generally good but rather dry. Coal of very good quality is obtainable along the banks of the Red Deer river and Michichi creek, the seams varying from two to six feet in thickness at the surface. There are no stone quarries and no economic minerals were observed. Deer, duck, geese, and a few partridges were occasionally seen. The surface of the south half of this township is so badly cut up by Red Deer river, Michichi creek and other ravines averaging two hundred feet in depth with cut banks as to render that portion of the township practically of no value for settlement.—*C. C. Fairchild, D.L.S., 1907.*

30. This township is best reached from Stettler over a good trail. The soil is a very tough clay loam suitable for grazing or mixed farming and the surface is prairie with no timber. There are a few small hay sloughs in the central part of the township. Water can be obtained in Michichi creek in the eastern part of the township and one spring in Fox coulée in section 5. The water is fresh but the supply is rather small. There is no danger from flooding and no water-power. The climate is dry with an occasional summer frost. Coal for fuel can be obtained from the township to the south and west along Red Deer river. There are no stone quarries and no economic minerals. No game was seen in this township.—*C. C. Fairchild, D.L.S., 1907.*

31. This township is best reached from Stettler over a good trail. The south two-thirds of this township is a tough clay loam suitable for grazing and mixed farming. The balance is very hilly with numerous small sloughs. There is no timber nor hay



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 20—Continued.*

in the township. Water may be obtained in Michichi creek at the southeast corner and in the various sloughs and small lakes in the northern part, none of which are alkaline. There is no danger of floods and no water-powers. The climate is dry with an occasional summer frost. Coal may be obtained for fuel from the valley of Red Deer river to the west. There are no stone quarries and no economic minerals were observed. No game was seen.—*C. C. Fairchild, D.L.S., 1907.*

32. This township is best reached from Stettler over a good trail. The soil is a tough clay loam suitable for ranching and mixed farming. There is no timber in the township. Some hay is cut near the west boundary on an area of about one hundred acres. Plenty of fresh water is obtainable in the lakes. There is no danger of flooding and no water-power. The climate is dry with an occasional summer frost. Coal for fuel is obtainable from Red Deer river valley to the west. There are no stone quarries and no economic minerals. A considerable number of duck and geese were seen on the lakes.—*C. C. Fairchild, D.L.S., 1907.*

33. The best route for reaching this township is by a good wagon trail which runs from Stettler on the Lacombe branch of the Canadian Pacific railway, to the Hand hills, via Big Valley creek, and which passes through this township, entering it in section 33 and leaving it in section 1. The soil averages from three to six inches of black loam over a hard clay or sandy subsoil, and may be described as mostly third class and suitable only for ranching purposes, although in the north part of the township there are some fairly level quarter sections, which may be called second class, and are suitable for mixed farming. The northwest and east parts of this township are steeply rolling prairie, with scattered clumps of gray willow and some small poplar, but the central and southwest parts are fairly level and open prairie. There is no timber of any description but there are small hay meadows scattered all through the township. Fresh water is fairly plentiful in the hilly parts of this township, there being numerous fresh water ponds, but in the level parts the water is alkaline and scarce. Mudspring lake, a large lake in the centre of the township, is about five feet deep and is quite alkaline, the water being very milky. The edge of this lake is very soft and all around the lake are to be found mudsprings from four to fifteen feet in diameter and extending to a considerable depth, which I was not able to ascertain, but it was more than twelve feet. No water-power can be developed. The climate is similar to that of the Stettler district and summer frosts are rare. Wood for fuel is obtainable in small quantities in the northwest and extreme east parts of this township, where there is some dry willow from two to three inches in diameter. There are no lignite veins, coal, stone or mineral. No game is found.—*R. H. Cautley, D.L.S., 1907.*

65. A fairly good trail crosses the township on sections 18, 17, 9, 3, 2, and 12. About sixty per cent of this township is swampy but the remaining forty per cent has about four inches of black loam with a clay subsoil suitable for mixed farming. The surface is all wooded with poplar, willow and spruce from three to six inches in diameter. There is no timber of any value. About one hundred tons of hay could be cut on the west side of Flat lake. Flat lake covers about ten sections of this township and Pine creek touches the northwest corner of section 31. This, with several small creeks flowing into Flat lake, gives an ample supply of fresh water. There is no water-power. The climate is good and there is no indication of summer frost. Wood for fuel can be obtained on every quarter section but no lignite veins were observed. No mineral of any value was seen in the township. Very little game was seen. Flat



## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 20—Continued.*

lake creek as the name indicates is rather shallow. It could be dug, being very rapid in some places, and thereby improve a large area of land in this township.—*J. L. Côté, D.L.S., 1907.*

66. The trail from Athabaska Landing to Lac la Biche, crosses this township from the southwest to the northeast corner. About fifty per cent of this township has a black loam soil with clay subsoil and is fit for mixed farming. The balance is spruce swamp. This township is all wooded with poplar, spruce and willow but there is no timber of any value. About one hundred tons of hay can be cut along Pine creek. Flat lake covers about two sections of the southeast corner and Pine creek crosses from the southwest to the northeast corner of this township. Both give a very good supply of fresh water. There is no water-power. Wood as fuel can be obtained on every section but no lignite veins were observed. There are no stone quarries and no minerals of economic value. Game is very scarce.—*J. L. Côté, D.L.S., 1907.*

67. (*East outlines*).—Along sections 36, 25, 24 and 13 the soil is a black loam with clay subsoil making it very fair. Sections 12 and 1 are in a large spruce swamp with hard bottom which will be drained some day.—*J. L. Côté, D.L.S., 1907.*

68. (*East outlines*).—Swamp and muskegs prevail along this line with an occasional ridge which seems to divide them. The land may be classified as third class.—*J. L. Côté, D.L.S., 1907.*

*Range 21.*

29. This township is reached either from Stettler on the northeast side of Red Deer river or from Gleichen on the southwest side, over good trails. The soil in the river bottom and along Kneehills creek coulée is mostly hardpan and sand. On the high banks the soil is generally a good black loam suitable for mixed farming. The surface is generally prairie with clumps of cottonwood spruce and poplar along the river banks, in the Kneehills creek and in the ravines adjoining these. The timber averages ten inches in diameter, although there are some trees measuring two feet in diameter in the river bottom; it will all be required by the settlers. Good upland hay can be obtained on the top of the high banks in large quantities. Plenty of good fresh water is obtainable from Red Deer river and Kneehills creek. A few springs are found in this township. Red Deer river has an average width of about five chains, a depth of three feet and a current of two and one-half miles per hour. There is little danger of flooding, and no water-power is available. The climate is dry with occasional summer frosts. Coal is obtainable along the banks of Red Deer river. There are no stone quarries and no economic minerals were observed. A few deer were seen in this township.—*C. C. Fairchild, D.L.S., 1907.*

30. This township is reached either from Stettler on the east side of Red Deer river, and Carbon on the west side of the river over good trails. The soil in the river bottoms is mostly hardpan and sand with very little growth. On the high banks the soil is generally a good clay loam and black loam suitable for mixed farming. The surface is generally prairie with clumps of cottonwood, poplar and spruce along Red Deer river bottom and in the various ravines. Timber will average ten inches in diameter but the quantity is limited and will all be required for the settlers' use. Good upland hay can be obtained on the top of the high banks of the river in large quantities. Plenty of good fresh water is found in Red Deer river and in Threehills creek on the southwest side. Red Deer river has a width averaging about five chains,



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 21—Continued.*

with a depth of three feet and a velocity of about two and one-half miles per hour. There is little danger of flooding and no water-power is available. The climate is fine and dry with occasional summer frosts. Coal is obtainable along the banks of Red Deer river. There are no stone quarries and no economic minerals were observed. No game was seen in this township.—*C. C. Fairchild, D.L.S., 1907.*

31. This township may be reached either from Stettler on the east side of Red Deer river and Carbon on the west side of the river over good trails. The soil in the river bottom is mostly hardpan and sand with very little growth. On the high banks the soil is generally a good black loam, suitable for mixed farming. The surface is generally prairie with clumps of cottonwood, poplar and spruce along Red Deer river bottom and in various ravines. Timber will average ten inches in diameter but the quantity is limited and will all be required for the settlers' use. Good upland hay can be obtained on the top of the high banks in large quantities. Plenty of good fresh water was found in Red Deer river, which averages five chains wide, three feet deep and has a velocity of two and one-half miles per hour. There is very little danger of flooding and no water-power is available. The climate is fine and dry with occasional summer frost. Coal for fuel is obtainable along the banks of Red Deer river. There are no stone quarries and no economic minerals were observed. No game was seen in this township.—*C. C. Fairchild, D.L.S., 1907.*

65. There is a good trail from Athabaska Landing to the township and the settlers have opened trails to reach mostly any point of the township. The soil is chiefly of black loam underlain by a clay subsoil and is suitable for mixed farming. About sixty per cent of this township is wooded and about forty per cent is scrub or growing poplar distributed all over the township, but no timber of any value is found. There is about one hundred tons of hay along Pine creek. This creek is about twenty feet wide, one foot deep and gives an ample supply of fresh water. There is no water-power and none can be developed. There is no indication of summer frost and the climate is good. Wood as fuel can be obtained on every section but no lignite veins were observed. There are no stone quarries and no minerals of economic value. There is very little game.—*J. L. Côté, D.L.S., 1907.*

67. (*East outline*).—Along this line about forty per cent is a sandy or stony soil while the balance is divided between lakes, muskegs and swamps.—*J. L. Côté, D.L.S., 1907.*

68. (*East outline*).—Athabaska river flows in a northeasterly direction and crosses the line on section 25. The valley is about three hundred feet deep with a comparatively easy incline. The soil along sections 36, 25 and 24 may be classified as second class but along sections 13, 12 and 1 it is generally spruce swamp with some ridges.—*J. L. Côté, D.L.S., 1907.*

*Range 22*

10 & 11. (*Third correction line*).—The best route for reaching this portion of these townships is by following the road along the correction line, from Leavings, a station in range 26, on the Calgary and Edmonton branch of the Canadian Pacific railway. At the time of my visit (November) this road was in excellent condition. The soil is either clay or sandy loam and is apparently well adapted for farming as proved by the heavy growth of grass and the excellent crops of grain grown in the vicinity. The surface is rolling prairie with one small coulée cutting the eastern boundary. There is neither timber nor brush in these townships. A large pond of water held by a dam, evidently for watering stock, was noticed in the eastern portion of township



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 22—Continued.*

10, range 22, but wells ranging in depth from fifteen to forty feet are the source of water supply. There are no water-powers. Hay may be cut in many places, as the natural growth in this locality is very luxuriant. The climate is equable and is not subject to summer frosts, but violent winds prevail throughout the entire district. Coal is the fuel most readily available and may be procured at any of the mines in the vicinity of Lethbridge. What appears to be shale, that was probably contiguous to coal was observed where a well was being dug in section 7 township 11, range 22, and I was credibly informed that farther north croppings of lignite were found, and that some coal had been taken out by the settlers. There were neither stone quarries, nor minerals of economic value found in these townships. Coyotes, foxes and badgers were the only game noticed.—*A. H. Hawkins, D.L.S., 1906.*

24. The township is all bare prairie, varying from undulating to rolling. The soil is clay loam with a subsoil of stiff grey clay, mixed with a slight amount of gravel. In some places the banks of the stream average about fifty feet in height and are rather steep. Herbage generally is first class except about one-tenth of the township which is exposed subsoil.—*Wm. Pearce, D.L.S., 1907.*

66. Athabaska Landing is located in this township on the south bank of Athabaska river. The provincial government has opened a trail to Lesser Slave lake which crosses on sections 21, 28, 29, and 30, and is in good condition. The soil is very light or swampy and there are only patches of fair land suitable for mixed farming. Fires have burned most of the wood leaving windfall and a few scattered green trees. There is no timber but there is an ample supply of fresh water. No water-powers occur. The climate is good with no summer frosts. Fuel can be obtained in every section but no stone quarries nor minerals of any economic value are found. There is very little game.—*J. L. Côté, D.L.S., 1907.*

67. (*East outline*).—The country along this line is rather swampy or low. A lake about two miles long and one mile wide touches the line at section 25. There are very fair patches of land.—*J. L. Côté, D.L.S., 1907.*

68. (*East outline*).—Athabaska river crosses the line in a northeasterly direction on section 12, in a deep ravine. The surface is generally undulating and the soil is fairly good.—*J. L. Côté, D.L.S., 1907.*

*Range 23.*

60. This township is reached from the Athabaska Landing trail but there is no trail into the township farther than to the northwest corner. The soil is mostly light and stony, and fit only for grazing or farming on a small scale. The northwesterly half is rolling and covered with a thick growth of small poplar and willow with a few small swamps of green spruce to the south, also considerable windfall. There are small lakes of fresh water in sections 18, 19, 30, 31 and 8, but they are all surrounded by muskeg. The southeasterly portion of the township is more level and swampy and is covered with scrub and timber. The most timber is on sections 35 and 36 consisting of poplar and spruce six to eighteen inches in diameter. There is no hay in this township except in small sloughs scattered over it but these are more numerous in the southeasterly half. The water is fresh but when the timber is gone it will be scarce as there are very few streams at present. There is no water-power. Wood for fuel is plentiful at present on almost every section. There are no stone quarries and no minerals of economic value. No small game was seen, but tracks of bear and moose were numerous.—*Hugh McGrandle, D.L.S., 1907.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 23—Continued.*

67. (*East outline*).—Sections 36 and 25, 24 and 13 are very fair undulating land but the balance is fourth class.

68. (*East outline*).—Sections 36, 25 and 24, are in a tamarack swamp while sections 13, 12 and 1 are in good rolling second class soil.—*J. L. Côté, D.L.S., 1907.*

*Range 24.*

10. (*Third correction line*).—The best route for reaching this portion of the township is by following the road along this correction line from Leavings, a station on the Calgary and Edmonton branch of the Canadian Pacific railway in range 26. This road at the time of my visit (November) was in excellent condition. The soil is either a clay or sandy loam and is apparently well adapted for farming, as the heavy growth of grass and the excellent crops of grain grown testify. The surface is rolling prairie traversed by Rocky coulée through its western portion. There is neither timber nor brush in that portion of the township which we travelled. There are several springs along Rocky coulée which furnish water to the cattle in this locality, but the water is rather brackish, evidently being strongly charged with mineral salts. The settlers however all have wells ranging in depth from fifteen feet to two hundred feet, which appear to furnish sufficient water. There is no hay in the township nor were any water-powers observed. The climate is equable and so far as I heard is not subject to summer frosts, but frequent and violent winds prevail throughout this district. Coal is the fuel most readily available and may be procured generally at one of the mines in the vicinity of Lethbridge or at Leavings. A short tunnel has been driven in Rocky coulée in section 31, evidently prospecting for coal, and the material removed has the appearance of being in close proximity to coal, and I have no doubt but that further developments would reveal a coal bed at no great depth. Wood in small quantities, chiefly willow and cottonwood, can be obtained on Oldman river. There is considerable sandstone in Rocky coulée which would not be difficult to quarry, and would I think make fair building material. No minerals of economic value were found in this township. The only game noticed was a few coyotes and badgers. This township is fairly well settled, at least along the correction line, and the settlers appear to be prospering.—*A. H. Hawkins, D.L.S., 1906.*

13. This township is reached by a good trail from Claresholm, a flourishing town on the Calgary and Edmonton extension of the Canadian Pacific railway. The old Blackfoot trail passes through the township, but much of it has been fenced across by the settlers. The soil of the township is a deep sandy loam along Little Bow river, but it becomes heavier at some distance back from the river. The surface is rolling prairie entirely devoid of woods or scrub of any description. Hay of good quality can be cut all over the township, although the grass along the river is quite short owing no doubt to the sandy nature of the soil. The northern portion has a permanent supply of good water in the Little Bow. Little or no water-power is available. The climate is that of southern Alberta, generally, with but little danger of summer frosts. Good crops are grown throughout the township. Coal is the fuel used by the settlers and can be obtained from a mine worked within reasonable distance of the township. Outcroppings of stone were noted along the river, but no quarries are in operation. No minerals of economic value were seen. Game is very scarce.—*W. T. Green, D.L.S., 1907.*

65. (*North outline*).—On this line there is no green timber with the exception of a small swamp in the north of section 34. The soil is light and third class. The



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 24—Continued.*

land is rolling and covered with fallen timber and small scrub. On the north boundary of section 34 there is a high hill, from the top of which can be seen nearly the whole of townships 67 and 68, range 24, and for a long distance to the south and west.—*Hugh McGrandle, D.L.S., 1907.*

66. This township is reached by wagon trail from Athabaska Landing to Baptiste lake and around the north and west sides of the lake, but it is very rough from the landing to the lake. The soil in this township is very light and stony and is fit only for grazing or small farming. There are a number of half-breeds living on the north and west sides of Baptiste lake, but they cultivate only small potatoe patches. The surface of the township is very rolling and is covered with fallen timber, poplar and willow scrub. A high range of hills runs from section 3 to the south end of Baptiste lake on the east side of which are a few swamps with green spruce and tamarack and a few clumps of green timber along the lake shore; this is about all the green timber in the township. The only hay seen in this township was on sections 31 and 32. The half-breeds cut most of their hay for winter use in township 66, range 25. The water is fresh and sufficient. Baptiste lake extends to near the centre of the township, and numerous small creeks flow thereto from the west, south and east. Wood for fuel can be had on nearly every section. No coal or lignite veins were seen in the township. No stone quarries and no minerals of economic value were found. No game was seen but ducks. Baptiste lake is teeming with jackfish.—*Hugh McGrandle, D.L.S., 1907.*

67. This township is reached by wagon trail from Athabaska Landing which enters at the southeast corner and passes through sections 1, 11, 15, 22, 27, and 34. The road is very rough and in much need of repair from the landing to Baptiste lake. The soil in this township is rather light but suitable for mixed farming or grazing especially sections 12, 13, 14, 15, 22, 23, 24, 26, 27, and 34, where the soil consists of four to six inches of black loam over a sandy clay subsoil. The surface of this township is rolling, the east half is scrubby with patches of prairie and clumps of poplar and a few small swamps with green spruce. The west half is mostly timbered, especially sections 6, 7, 18, 19, 30, 31, 32 and 29, the timber consisting of poplar, spruce, birch and some jackpine; there are only scattered trees sufficiently large for making lumber. The east half of section 18 is mostly all birch and poplar from four to six inches in diameter. There are no large hay meadows in the township but there is some slough hay along the creek in section 16 and along the outlet of Baptiste lake, and patches of upland grass through the eastern part of the township. The water in this township is fresh and sufficient consisting of Baptiste lake in the southeast corner, lake No. 1, in the northeast corner, several small ponds scattered over the township and creek running diagonally across from section 31 into Baptiste lake in section 10. There is no land liable to be flooded except two or three acres at the east end of the bays of Baptiste lake in section 1. There are no water-powers in this township. There is plenty of wood for fuel on almost every section. There are no stone quarries, and no minerals of economic value are found. Small game is very scarce, a few partridges and ducks were seen, and plenty of jackfish are found in Baptiste lake and Lake No. 1. Sections 20, 21, 28, 29, 32, and the east halves of 30 and 31 are mostly all burnt swamp with islands of jackpine.—*Hugh McGrandle, D.L.S., 1907.*

68. This township is reached by wagon trail from Athabaska Landing which passes almost through the centre of the township from south to north, entering at the southeast corner of section 3 and leaving at the northeast corner of section 32. From



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 24—Continued.*

Athabaska Landing to Baptiste lake the trail is very rough and in wet seasons, muddy and generally in great need of repairs. From Baptiste lake north the trail follows a sandy ridge which in places has the appearance of a railroad embankment. The soil varies from a sandy loam to clay, with considerable surface stones in places especially in the eastern portion of the township; it is suitable for grazing or farming on a small scale. The surface is rolling and hilly and covered with poplar and willow scrub with clumps of green poplar over the central portion of the township. Sections 6, 7, 17, 18, 19, 30, 13, 24, 25, 35 and 36 are almost all covered with green timber consisting of poplar, spruce and jackpine from eight to ten inches in diameter. Some spruce will go as high as eighteen to twenty inches in diameter but not in sufficient quantities for lumbering purposes. The only hay in the township is along the creek on the east half of section 3 and a few small patches of high land grass on the southwest quarter of section 2. The water is fresh and sufficient. There are four fair-sized lakes, one in each corner of the township, but there are very few running streams. A creek twenty links wide and one foot deep runs out of the south end of lake No. 2 in an easterly direction over a stony bottom leaving the township on the east boundary of section 24 thence in a northerly direction entering the township again at the northeast corner of section 25, and leaving at the northeast corner of the southeast quarter of section 36. There is considerable hay along this creek in range 23. A creek flows from the southeast end of lake No. 3 in a northeasterly direction across the southeast corner of section 27 and through section 26 entering lake No. 2 in the southeast corner of section 26. This creek flows through a deep ravine over stones but contained very little water at time of survey (September). There are no water-powers in this township. No coal or lignite veins were seen. No stone quarries or minerals of economic value were found. There is no small game except a few ducks but tracks of moose were plentiful and we noticed a spot near lake No. 2 where three had evidently been killed. There are plenty of jackfish of good size in lakes Nos. 1, 2, 3 and 4 in this township.—*Hugh McGrandle, D.L.S., 1907.*

*Range 25.*

65. (*East outline*).—The soil along this line is light and stony, only suitable for small farming or grazing, classed 3 and 4. The surface is rolling and scrubby and covered with fallen timber; there are numerous small swamps of green spruce but no timber of commercial value. There is a crooked lake in section 1 from five to ten chains from the line and extending the whole length of the section. There is another lake in section 7, township 65, range 24, touching the line at 25 chains and extending toward the northeast. No fish were seen in these lakes.—*Hugh McGrandle, D.L.S., 1907.*

*Range 29.*

10. Two main trails lead into this township, one from Macleod by way of Five-mile creek and the other from Leavings. These trails were in good condition until settlers, who have been coming into this and the adjoining townships in large numbers in the last year or so, fenced their quarter sections and changed the trails to the proper road allowances. Many of the roads were graded and bridges built during the summer, however, and the trails will soon be in good condition again. Porcupine hills, an extremely high and very rough range, extends diagonally through this township. The northeasterly part is open rolling prairie, while the hills are timbered with some fine fir, very straight and high. This timber is not very extensive and is being rapidly depleted by settlers. The prairie sections and the valleys between the hills afford



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## TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

*Range 29—Continued.*

considerable hay. Fine streams of good fresh water are numerous. Many of them have their sources in the hills in the township and could be easily utilized for irrigation in dry seasons. None of the streams are large enough to generate water-power. Some light frosts were noticed in the early summer but despite the late spring the grass was abundant by the middle of May and the crops sown seemed to grow very fast. The timber on the hills affords fuel for the settlers and if carefully preserved will continue to do so for several years. There were no stone quarries in the township but plenty of limestone is available. No minerals of economic value were seen. Some deer and partridge were seen among the hills.—*C. C. Smith, D.L.S., 1907.*

## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 1.*

13. This township is reached by a fair trail from Claresholm, a flourishing town on the Calgary and Edmonton extension of the Canadian Pacific railway and distant about thirty-five miles. This trail has been surveyed from Claresholm to Lyndon postoffice and is good in dry weather. From Lyndon to Lyndon mill a trail has been graded by the Lyndon Lumber company. This portion is almost impassable in wet weather but is very fair in a dry season. Lyndon mill is situated in section 11, of township 13, range 30 west of the fourth meridian. When running at full capacity it has an output of 12,000 feet of lumber per day, and supplies lumber to the settlers for miles around. Some good spruce and jackpine is found on section 1, township 13, range 1 west of the fifth meridian, and on section 2 township 13 range 30 west of the fourth, and from these two sections the lumber company have taken nearly all their logs. North of Lyndon creek the township is more or less open, and hay can be cut in fair quantities. The surface is very broken and hilly and is suitable for ranching only. Water of the finest quality is plentiful and permanent in Lyndon creek and its many tributaries, small spring creeks being numerous. Wood can be had in the south portion of the township both for fuel and building purposes. No minerals of economic value were noted. Game seems to be very scarce.—*W. T. Green, D.L.S., 1907.*

14. This township can be reached by a fair trail from Nanton which, however, traverses a high hill in the northeast corner of the township making the transport of heavy loads very difficult. In a very dry season or in winter this hill can be avoided by following a trail around the foot of the hill on the west side. In an average summer, however, the trail is impassable. The township is distant from Nanton about twenty-five miles. Nanton is a flourishing town on the Calgary and Edmonton extension of the Canadian Pacific railway. Five years ago, I believe there was only a station while now it is a thriving centre with a population of about 700. The soil is generally a black loam over clay and were it not for the danger of summer frosts, much of it would be excellently suited for agriculture. Willows postoffice situated in section 12 on Willow creek seems to be the point demarkation. Below there crops generally will mature but above that point on Willow creek only very occasionally will anything ripen. The township is essentially a ranchers' paradise. Grass grows luxuriantly and hay of excellent quality can be cut on much of the open land north of Willow creek. South of Willow creek, the country is hilly and covered with willow scrub and poplar. Spruce of fair quality is to be found on sections 12 and 13 of township 14, range 2. North of Willow creek the country is hilly but generally open. Water is both abundant and permanent. Willow creek, the south branch of Willow



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 1—Continued.*

creek and the many creeks and springs flowing into these provide an excellent quality of water. No water-power is available. Fuel is amply provided for in the bush south of Willow creek. No coal or lignite veins were noticed. Outcroppings of rock were seen in several places along Willow creek but no quarries are in operation. No minerals of economic value were found. An excellent variety of trout is abundant in Willow creek. Two deer were seen in the southwestern portions of the township during the progress of the survey. Coyotes are numerous and some grouse were noticed. Timber wolves are occasionally a source of loss and annoyance to ranchers in the southern part of the township. There are also a few lynx, bob-cats and marten. *W. T. Green, D.L.S., 1907.*

*Range 2.*

10. This township may be reached by a good wagon road from Cowley. Though most of the township is hilly prairie much of it is very excellent farming and grazing land. Sections 6 and 7 are partly timbered with fir, spruce and poplar sufficiently large for building purposes. In the settled part of the township splendid crops and good herds of cattle and horses were seen. Hay can be cut in all the valley and on the hillsides. The north fork of Oldman river with its numerous tributary creeks afford a permanent supply of good water. The north fork could be utilized to develop extensive water-power. No summer frosts were noticed. Besides the wood referred to above there is an abundant supply of good bituminous coal for fuel. Though there appeared to be some limestone, no quarries were in operation. Game consists of partridge, chickens, coyotes and fox, and the river and creeks afford plenty of trout for the 'patient angler.'—*C. C. Smith, D.L.S., 1907.*

11. A good wagon road runs from Cowley to and partly through this township. It is necessary to ford the north fork of Oldman river, however, and even to one familiar with the fords this is a difficult and dangerous task. Generally speaking the surface of the township is very hilly prairie. Several creeks run in a southerly direction into the north fork through deep valleys or rather coulées, and high, rough watersheds divide the basins of the creeks. Bluffs of poplar and some fir and spruce were seen in sections 5 and 6. The valleys of the creeks have a good deep clay or sandy loam, but the hills are very stony and have a light soil. The township is excellently adapted to grazing and can be profitably farmed. Good hay can be cut in any of the valleys or on the lower hillsides. Besides the numerous creeks mentioned above there are very many springs affording a permanent supply of good water. There are no bad floods, as there is very little level bottom land in the valleys. None of the creeks except Callum and Coal creeks appear to be useful for water-power, though they all could be easily and profitably used for irrigation purposes. No summer frosts were seen. There is considerable limestone but no quarries have so far been opened. No minerals were seen. There were a few chicken and partridge in the bluffs, and the creeks afford a good supply of speckled trout.—*C. C. Smith, D.L.S., 1907.*

*Range 3.*

11. The wagon road from Cowley runs along the southerly side of the north fork of Oldman river through the Gap in the Livingstone mountains and then crossing Racehorse creek it enters this township in section 5. This road is travelled considerably and is in fairly good condition for a mountain road. A pack trail also runs along the northerly side of the river. Much of the township is very rough and mountainous, though along all the creeks there is good land which is being taken



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 3—Continued.*

up and utilized for farming and grazing. Livingstone mountains are very high and in this township rise abruptly from the valleys on each side. This township, at least in the southerly part, is mostly timbered with poplar, fir and spruce, of good size. Much of the timber in this country will doubtless become valuable for use in the coal mines. Oldman river with its tributary creeks, together with many springs, afford a permanent supply of good water. Oldman river, where it flows in a narrow defile through the Livingstone mountains, could be used to develop a very extensive water-power. There is much limestone but no quarries were in operation. A good quality of bituminous coal was seen in many places along the banks of the river. Game consists of bear, deer, fox, coyote, partridge and chicken. The climate was pleasant.—*C. C. Smith, D.L.S., 1907.*

*Range 4.*

20. This township can be reached by a good trail from Okotoks a flourishing town on the Calgary and Edmonton extension of the Canadian Pacific railway and distant therefrom about thirty-five miles. The nearest post office is Millarville, which is reached by a good trail, one branch of which follows the north fork of Sheep river, the other keeping to the valley of Ware creek, a tributary of Sheep river. The surface of the township is very hilly and is covered with scrub and timber except along the valleys of Ware creek and Sheep river. In these valleys there are some excellent hay lands which make the township, especially the eastern portion, well adapted for ranching. In the southwestern and western part some good spruce and jackpine is found and a sawmill could be operated there to advantage. Plenty of wood both for fuel and building purposes is obtainable all over the township. An ample and permanent supply of excellent water can be had in Sheep river and Ware creek and their numerous tributaries. Little or no water-power could be developed. The climate is that of the hill country generally—cool nights during the summer with frequent frosts. Outcroppings of rock were noticed along Ware creek but no stone quarries are in operation. No minerals of economic value were noted. Game is not plentiful though some partridge, grouse and coyote were seen. Fish are plentiful both in Sheep river and Ware creek.—*W. T. Green, D.L.S., 1907.*

21. This township is about twenty-five miles, by a good trail, from Okotoks, a growing town on the Macleod extension of the Calgary and Edmonton branch of the Canadian Pacific railway. The nearest post office is Millarville on section 12, township 21, range 3. Another trail from Priddis post office leads to the sawmill on section 25 in this township. The soil, generally, consists of black loam, varying in depth from three to eighteen inches, with a clay subsoil and frequently, on the hill-tops, with stones or rock. The township is suitable for pasturage only, as I do not think any crops would ripen here, except, possibly, the most hardy vegetables. The surface is hilly and rolling. There are a few flats along the creek bottoms, but they are mostly covered with willow and scrub, and are more or less swampy. There is but a small proportion of open prairie in the southern part, and here only on the southerly face of the hills. There is much merchantable timber still standing, such as spruce and banksian pine—commonly called jackpine—as large as thirty inches in diameter. It is more abundant on sections 8, 16, 17, 19, 20, 22, 24, 25, 28, 29, 31, 32 and 33. The best timber, however, I think, is on sections 28, 29, 32 and 33. I met several parties who were contemplating erecting a sawmill somewhere on Fisher creek. A sawmill has already been in operation for several years on section 25, which may be reached by a well graded road from the east. Most of the timber on section 25 has already



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 4—Continued.*

been removed, several million feet of lumber having been cut. There was also at one time, a sawmill on the northwest quarter of section 10, but it has since been removed. At a low estimate there is still available about five million feet of lumber. Owing to want of good roads and the numerous muskegs most of the lumbering operations would have to be carried on in winter. I succeeded in moving my wagons as far as the southeast quarter of section 30, by following the valley of Fisher creek, but that was owing to the swamps being frozen. With snow on the ground good roads could be made along the creek, but the bulk of the logs in the northerly part of this township will have to be moved down the valley of Whisky creek, thence to the south fork of Fisher creek. There are no hay meadows, but hay has apparently been made along the creek in section 29, where remains of old hay corrals were found. I also came across the remains of an old shack on the south side of the creek on the southeast quarter of section 30, said to have been the site of an old illicit still. This township is well watered, both by creeks and springs. The north branch of Sheep river cuts diagonally across the south half of section 6 and part of section 5. It must be quite a formidable stream at high water. It supplies water to the irrigation ditches on some of the northwesterly sections in township 20. A good-sized stream, Fisher creek, traverses sections 30, 29, 20, 21, 16, 10, 11 and 12. Whisky creek touches the northerly part of section 32. Numerous springs add to the volume of these creeks. The water is of good quality and the springs appear to be permanent. There are no water-powers in this township, and any attempt at damming Fisher creek might require to be done in the next township west. With reference to the climate, I think the indications are that no cereals can be ripened here, owing to prevailing summer frosts. I crossed the ice, on standing water, with my outfit early in November. A rancher to the south sows both oats and wheat for green feed, which is excellent for cattle where the supply of hay is limited. Fuel is plentiful in both green and fire-killed timber, such as poplar, spruce and jackpine. There are no stone quarries, no minerals of any economic value, nor were there any indications of coal. Game is still in evidence. Grouse, partridge and rabbits were seen, also signs of deer, which very probably will soon be exterminated by the Indians and white men, who hunt here in the fall. An Indian pack trail traverses this township southerly from Morley, on the Stony Indian reserve. It is much travelled by bands of Stony Indians, and leads to the Walrond ranch, and also to the trail crossing Livingstone range into the valley of Livingstone river. The southerly half of this township has been overrun by horses and cattle, resulting in the pasture being very bare at the time of my survey. There are but two settlers, both in the southeast corner. The only farming, however, that they have attempted is sowing oats for green feed for their cattle. Another settler, the proprietor of the sawmill on section 25, has also quite a number of cattle, but here the grazing area is very limited. Many settlers from the open prairie, miles to the east, came in here by way of the graded sawmill trail, for their fencing and building material. There are no good trails within the interior. Fisher creek has to be crossed a number of times in going up its valley, and approaches have to be constructed for crossing. Also, owing to the springy nature of the side hills many of the bottom lands are wet and boggy. This township is not at all suitable for general farming and only to a limited extent for cattle-raising. At some future time, when land becomes of greater value, and when the valuable part of the timber has been removed and the inferior part consumed by fire, then, by judicious draining and irrigation, most of the bottom lands in this township that are at present swampy, may become valuable for grazing and dairying purposes.—*C. F. Miles, D.L.S., 1906.*



## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 4—Continued.*

22. This township can be reached by a good trail from Calgary as far as Priddis. From Priddis the trail is only fair. In section 25 of township 22, range 4 the road divides, one leading northwesterly through sections 25 and 25 and thence on through the Saree Indian reserve, the other running southwesterly along the south branch of Fish creek to section 18. The latter would be almost impassible until late in the fall. The soil is generally a rich black loam over clay, although stone is frequently found on the hill tops. If it were not for the danger of summer frosts, the valley would be excellently fitted for agriculture. The surface is generally roughly rolling, the southerly and westerly portions becoming quite hilly. Almost the entire township is wooded, much of the northern part being covered with standing fire-killed poplar and jackpine. In the south some fair timber is found. The valleys are generally open. Hay can be cut on most of the valleys, although some are too swampy to make that possible. Water is abundant and permanent. The two branches of Fish creek, with the innumerable spring creeks scattered over the township, provide an excellent quality of water. No water-power could be developed. Summer frosts are general, though I believe there are some years when oats and barley will mature. No stone quarries were noted nor any minerals of economic value. Fuel is abundantly provided for in the fire-killed timber throughout the township. Game seems scarce, partridge and coyote being all that were seen. Deer are to be found, I believe; also an occasional bear in the western portion. A small variety of trout was found to be quite plentiful in the two branches of Fish creek.—*W. T. Green, D.L.S., 1907.*

44. The best route for reaching this township is through Bluff Centre, from either Ponoka or Lacombe. A wagon trail enters the township in section 12, and another, branching from the Bluff Centre-to-Buck Lake trail enters it in section 36. The soil is in parts suitable for agricultural purposes, but the township is largely composed of spruce muskegs, sloughs and jackpine ridges. Some patches of timber both dry and green suitable for settlers' purposes are found especially in the valley of the west branch of Blindman river. There are no large hay meadows, but grass suitable for pasturing is found in the majority of sections. Water is generally of a pure quality, the numerous small creeks and springs and the branch of Blindman river forming a sufficient and permanent supply for future settlers. The west branch of Blindman river enters this township on the north boundary of section 33 and leaves it in section 13, flowing in a southeasterly direction; its average width is about seven feet and its depth three feet with banks from twenty to thirty feet. There does not seem to be sufficient fall in this branch of Blindman river for the development of a serviceable water-power. The climate is similar to that of Edmonton. There is plenty of dry and green timber for fuel but no traces of coal, stones or minerals of any economic importance were found. There are some moose in this part of the country and a few bear, deer, rabbits, prairie chicken and some partridge.—*H. L. Seymour, D.L.S., 1907.*

47. This township is best reached by wagon trail from Wetaskiwin, entering section 1 and being well travelled on account of the lumbering carried on in this township. In section 10 this trail branches, one branch leading westward to the northeast end of Buck lake, another northward along Modeste creek and a third leads southward up the same creek. With the exception of the southwesterly part, which though quite heavily timbered with spruce, poplar, birch and balsam, is rough and uneven. The southerly part of the township is composed of timber berths numbered 1160, 1211 and 1353, being covered with spruce up to thirty inches in diameter and good sized poplar. There is but very little open country in the remainder



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 4—Continued.*

of the township, for where not thickly timbered with spruce, poplar and some birch or jackpine it is covered with brulé, windfall and willow underbrush. It is quite rough along Modeste creek and its small tributaries. No hay meadows of any size exist in this heavily timbered township. Modeste creek flows northerly through the centre of the township and is from thirty to fifty feet wide, three feet deep with banks twenty-five feet high. A creek locally known as the 'Little Poplar,' when entering the township in section 24 is but ten feet wide but before it joins Modeste creek (locally known as Poplar river) in section 26, it becomes nearly as wide and might be mistaken for the main stream. A number of smaller tributaries containing excellent water are found in other parts of the township. There seems to be no possibility of developing any serviceable water-power on either of the two before mentioned streams. The climate is similar to that at Edmonton. There is plenty of dry and green timber for fuel, but no traces of coal were found. No stones or minerals of any economic importance were discovered. With the exception of mink, found along Modeste creek and its main tributary and a few weasels, there is very little game in this township.—*H. L. Seymour, D.L.S., 1907.*

*Range 5.*

48. This township is reached from township 49, range 5, by a wagon trail which leads across the northeast corner of the township along Modeste creek, this trail being fairly well travelled but hilly. An old pack trail leads from Modeste creek in section 26 southwards to Buck lake. The northerly and northeasterly portions of this township would be most easily cleared of the brulé and brush covering the rolling country, and the soil is good for agricultural purposes, the greater part of the township, however, while fairly level, is thickly wooded with spruce and poplar, especially sections 18 and 19 where some spruce to twenty-four inches is found, also tamarack and poplar of good size and quality. In section 26 a hay meadow over fifty acres produces good grass and peavine. No other large hay meadows were found, however. Except in the middle of the township a number of small creeks of good water were found and a creek fourteen to sixteen feet wide, two to three feet deep, with banks from forty to one hundred feet wide, enters this township from the south in section 3, is joined by another creek four feet wide in section 11, and flows into Modeste creek in section 13 or 24. A description of Modeste creek, which flows across the northeast corner of the township, was given in the report on township 49, range 5. There is not sufficient fall in any of the above mentioned streams to develop serviceable water-power. The climate is similar to that of Edmonton. There is plenty of dry and green timber for fuel, but no traces of coal were found. Game, which is very scarce, consists of bear, deer, moose and lynx. Along Modeste creek mink tracks were noted.—*H. L. Seymour, D.L.S., 1907.*

49. The best route for reaching the township is by wagon trail from Edmonton, which crosses Saskatchewan river in section 13, township 50, and enters the township near the northeast corner of section 33. On account of the lumbering in this and the adjoining townships the trail is fairly well travelled, but from Saskatchewan river south it is quite hilly and rough. The southwesterly portion of the township through which Modeste creek flows is heavily timbered with spruce to twenty-four inches and some large poplar, two lumber camps having operated there this winter cutting timber on a permit. When cleared the soil would be good for agricultural purposes but the country is rough. The northeasterly portion of the township has generally good soil, the country being heavily rolling, covered with



## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 5—Continued.*

poplar and willow scrub, brulé and patches of good spruce and poplar. The northwest quarter of section 8 and the southwest quarter of section 29 are two river flats of from thirty to forty acres, on which good hay has been cropped for the last two years. There are also other smaller hay meadows along Modeste and Buck lake creeks. In the east of the township there are a number of small streams of excellent water and in the west Modeste creek, from fifty to one hundred feet in width, and from two to three feet deep in the late summer. It has a good current in banks from fifty to one hundred feet high and flows into Buck lake creek in section 20, the latter creek differing only by a greater depth of water which in both streams is of good quality. There does not seem to be sufficient fall in either of the above mentioned streams to develop any serviceable water-power. The climate is similar to that at Edmonton. There is plenty of dry and green timber in this township for fuel but no traces of coal were found. Along the banks of Modeste creek, some friable sandstone of brownish colour was noted. There is practically no game in this township, a bear or deer track being rarely seen.—*H. L. Seymour, D.L.S., 1907.*

54. (*North part*).—A fairly good wagon road leaves the trail from Lake St. Ann to S. W. McDonald's farm, at a point about one-half mile east of Mr. McDonald's farm; then running north it continues through the township. The soil is not very good, consisting of three or four inches of black loam with a subsoil of clay or gravel. It can be rated as second class land and is suitable for mixed farming. The surface is generally rolling with heavy poplar and brush along the north boundary but being fairly open in the south. There is no timber of any value. There is very little hay, although there are small patches where some hay could be cut. The water is fresh and the supply is permanent and sufficient, being furnished by two small lakes and several small ponds. There is no land liable to be flooded. There is no means of furnishing water-power. The climate is excellent, being similar to that of Edmonton district. Wood for fuel may be obtained on every section, but no coal veins have been discovered. There are no stone quarries and no minerals of any economic value. There is very little game.—*A. Michaud, D.L.S., 1906.*

55. There is a fairly good wagon road which leaves the trail from Lake St. Ann to Donald McDonald's farm, at a point about half a mile east of McDonald's farm. This road runs north through the centre of townships 54, 55 and 56, range 5, ending in the northeast quarter of section 16, township 56, range 5. There is also a good road running from Lake St. Ann to McLeod river, which enters this township on the east boundary of section 1 and leaves it on the west boundary of section 18. The soil is fairly good consisting of 6 to 8 inches of black loam over a sand or clay subsoil and is suitable for mixed farming. The surface is rolling and is covered with brush and small poplar 3 to 8 inches in diameter. About 150 tons of hay could be put up around Little Island lake in sections 7 and 8 and small quantities of upland hay could be cut in several small prairies in the northeastern part of the township. There is no timber of any value, for lumber. The township is fairly well watered by five fair-sized fresh water lakes which are permanent. Of these Lessard lake in sections 26, 27, 34 and 35, and Little Island lake in sections 7 and 8 are the most important. There is no land liable to be flooded. The climate is excellent and is similar to that of the Edmonton district. Wood for fuel is obtainable on every section, but no coal veins have been discovered. There are no stone quarries and no minerals of any economic value. There is very little game, but there is good pike fishing in Lessard lake.—*A. Michaud, D.L.S., 1906.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 5—Continued.*

56. There is a fairly good road which leaves the trail from Lake St. Ann to Donald McDonald's farm at a point about a half mile east of Mr. McDonald's farm. This road runs north following the centre line of townships 54, 55 and 56, range 5, and terminates in the northeast quarter of section 16 of this township. The soil is good, consisting of six to ten inches of black loam over a clay subsoil, and is suitable for mixed farming. The surface is undulating and is covered with brush and poplar three to eight inches in diameter. In the east half of section 5 and in the west half of section 4, there is some good spruce timber ten inches in diameter. There is very little hay. The water is fresh, but is not very plentiful, there being only one small permanent lake on the east boundary of section 26, but there are several small creeks containing fresh water with an average width of three to four feet and a depth of six to eighteen inches. There is no land liable to be flooded. There is no way of obtaining water-power. The climate is excellent, being similar to that of the Edmonton district. Wood for fuel is obtainable on every section. There are no stone quarries and no minerals of any economic value. There is very little game.—A. Michaud, D.L.S., 1906.

*Range 6.*

49. This township is reached from township 49, range 5, by a wagon trail which enters section 25 and follows up Buck lake creek to a lumber camp in township 48, range 6, leaving the township in section 3, also by a wagon trail across the northeast corner of the township which leads to Saskatchewan river in section 8, township 50, range 6. Both these trails have been well travelled but are hilly, especially the one to the south. The westerly two-thirds of the township is heavily timbered with spruce to twenty-four inches and some large poplar. The soil is good and the easterly third of the township might be easily cleared of the brulé, poplar and willow scrub, which cover the rather rough country. A few patches of hay meadow are found in the easterly part of the township and in section 31. Saskatchewan river with banks from one hundred to one hundred and seventy-five feet high and one quarter of a mile wide enters this township in the northwest corner. Buck lake creek, four feet deep, fifty to seventy-five feet wide with banks one hundred feet high enters the township in section 2, and leaves in section 24. Except in the middle of the township small creeks containing good water are found. There does not seem to be sufficient fall in Buck lake creek to develop serviceable water-power. The climate is similar to that of Edmonton. There is plenty of dry and green timber for fuel but no traces of coal were found. No stone or minerals of economic importance were found. Game is very scarce in this part of the country. Bears are probably most numerous and tracks of deer and moose were seen.—H. L. Seymour, D.L.S., 1907.

*Range 7.*

54. The shortest and best route whereby this township can be reached from a railway point is by a good wagon trail from Edmonton to Grey's store. This store is situated in section 28, township 53, range 6. Thence there was a trail for about two miles from there it was necessary to open a trail through the woods entering the township in section 24. This trail was opened out northwesterly to the north boundary of section 34. A good pack trail passes through sections 24 and 23 and westerly connecting Lake St. Ann with Jaspar House. The surface of this township is gently rolling but is broken on the east by Pembina river valley and on the north by a couple of ravines about one hundred feet deep in which are good streams of water. The township is timbered throughout. On sections 25, 26, 35 and 36 the bush is not



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 7—Continued.*

as thick as it is to the west of these sections. The timber consists of poplar ranging in size up to two feet in diameter and averaging ten to twelve inches. Along with this poplar in many places there is a thick growth of willow ranging in size up to five inches in diameter. The soil generally consists of three inches of black loam with a subsoil of hard stiff clay which would be very difficult to cultivate. In many places the clay was so hard that the mounders were compelled to use picks. The clearing of the bush in this township would cost about thirty-five dollars per acre. From this it can be seen that present settlement is not probable. There is abundance of good water of a permanent character. There is no hay. Wood fuel is abundant and there is probably an underlying stratum of coal about one hundred and fifty feet below the surface, for coal outcrops along Pembina river are frequently to be seen, the seams appearing to be from five to six feet thick. There are no water-powers, no stone quarries nor minerals of economic value. No game was seen in the township.—*R. H. Knight, D.L.S., 1906.*

55. The nearest and best route whereby this township can be reached from a railway point is by a good wagon trail from Edmonton to Gray's store which is situated in section 28, township 53, range 6. From Gray's store the trail continues westward for two miles, and from there it was necessary to open a trail through the woods, entering the township at the south east corner of section 3. This trail was opened to Pembina river in section 22. The surface of this township west of Pembina river is nearly level, except for a couple of ravines in sections 16 and 21 in which streams of good water flow. Sections 29, 30, 31 and 32 are composed chiefly of swamps. All that portion of the township lying to the east of Pembina river is broken and hilly, except sections 25 and 36, which are somewhat gently rolling. The soil throughout consists of about three inches black loam with a hard white clay subsoil, which is exceedingly difficult to cultivate. The whole of the township except a few swamps or muskegs is covered by a thick growth of poplar, averaging about ten inches in diameter. In many places the trees are twenty inches in diameter and are long and straight. To clear the land for agriculture the cost would be upwards of thirty-five dollars per acre. This will retard the settlement of the township. The only hay found is around Michaud lake in section 25. Pembina river which runs through the township enters in section 1 and passes through sections 1, 12, 11, 10, 14, 15, 23, 22, 27, 28 and 33. The water of the river is good. The cross section at time of survey (November) was about six hundred square feet having a velocity of about two miles per hour. At high water the cross section is fully ten times as great. There are no water-powers nor stone quarries. At many points along the river there are outcrops of apparently good sandstone, in some places forty feet thick. Underneath this sandstone is a layer of lignite coal, of a superior quality being equal to that found in the vicinity of Edmonton. The seam of coal seems to be about six feet thick and outcrops frequently along the river. Other minerals of economic value do not occur. There is no game.—*R. H. Knight, D.L.S., 1906.*

57. A good road runs from Lake St. Ann, crossing the lake at The Narrows, and enters this township at the southeast corner, thence it runs in a northwesterly direction across the township to McLeod river. In section 16 other short trails branch off from this main trail to the different farms in this neighbourhood. In the northwest quarter of section 3 this road is joined by a road cut by the Grand Trunk Pacific railway survey parties, which also enters the township in the southeast corner. The soil in the centre of this township, in the valley of Big and Little Paddle rivers, is first class, consisting of from ten to eighteen inches of black loam over a clay sub-



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 7—Continued.*

soil, and is suitable for all kinds of farming. In the extreme north and south parts of the township the soil is not so good, the depth of black soil averaging from four to eight inches over gumbo or clay subsoil, but it would be considered second class land suitable for mixed farming. The valley of the two Paddle rivers, which run from west to east through the centre of the township, is level and is filled with willow brush and in some places with hay meadows. The two south rows of sections and the north one and one-half rows are rolling and timbered with heavy poplar five to ten inches in diameter. There is no timber suitable for lumbering purposes, but good building timber can be obtained in the north and south parts of the township. In sections 24 and 25 there is a large hay meadow which will produce about one hundred tons of hay, and in sections 28 and part of 21 there is another large hay meadow which will produce from two to three hundred tons. There are also small patches all over the centre of the township where hay may be cut. The township is well watered by the two Paddle rivers, which run through the centre of the township from west to east and which meet at the northeast corner of section 22, also by Pembina river, which runs through the extreme southeast corner of the township. Of these, Pembina river averages four chains wide, four feet deep and has a current of three miles an hour. Big Paddle river averages thirty feet wide, two feet deep and has a current of two miles an hour. Little Paddle river averages twenty feet wide, one foot deep and has a current of two miles an hour. There are no lakes and no land is liable to be flooded. There is no means of obtaining water-power. The climate is excellent and similar to that of the Edmonton district. Wood for fuel is obtainable on nearly all sections, but no coal has been found. There are no stone quarries, and no minerals of economic value. There is no game in this township.—*A. Michaud, D.L.S., 1906.*

*Range 9.*

54. This township was reached by crossing Chip lake on the ice, thence by pack horses to section 21. There is a trail known as 'Jack's trail' passing through the north part of this township. The soil is mostly clay and is suitable for farm purposes. The surface is gently rolling, covered with poplar and willow. In the southwest sections of this township and in those sections bordering on the lake there is a large tamarack muskeg, which might be suitable for farm purposes when drained. There are no meadows, but some hay is found along the lake. The water is fresh and consists of one large creek running southerly through the township. It crosses the north boundary of section 34 and flows into Lobstick river. It is about fifty links wide and from two to six feet deep. No water-power exists in the township. The climate was very cold at time of survey—May. Dry tamarack, spruce and poplar may be obtained in large quantities for fuel. No stone quarries nor minerals were found. Bears, wolves, ducks and geese were the only game seen.—*J. C. Baker, D.L.S., 1907.*

*Range 10.*

53. We reached the township by crossing Chip lake on the ice. It can also be reached by the Yellowhead pack trail which runs through the southern part of this township. The soil is principally clay, and when cleared of the heavy bush will be suitable for farming. This township is gently rolling and covered with a heavy growth of poplar, willow, jackpine, tamarack, spruce, birch and balsam. Some timber suitable for lumber can be found in the southern part of this township. No hay meadows were seen, but hay in quantity can be obtained along the shore of Chip



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 10—Continued.*

lake. The water in this lake as well as in all the creeks in this township is fresh. The creeks are small and I think will be dry in summer time. The climate was cold at the time of survey—April. Plenty of dry tamarack, jackpine, spruce and poplar can be obtained for fuel, but no coal was seen. No stone quarries nor minerals were observed. Bear, mink, lynx and plenty of duck and geese on Chip lake were the only game seen.—*J. C. Baker, D.L.S., 1907.*

54. This township was reached by crossing Chip lake on the ice. 'Jack's pack trail' passes through a part of this township, crossing the north boundary of section 34. The soil is mostly clay and is suitable for farming. The surface is gently rolling and covered with poplar, willow and spruce, but there is no timber of importance in this township. Hay is plentiful along the lake, but no hay meadows were seen. Fresh water is found in the lake. One large creek occurs in the western part of this township. It flows into Chip lake, crossing the north boundary of section 32. It is about fifty links wide and three to five feet deep. There is no water-power. The climate was cold at the time of survey—April. Plenty of dry poplar and tamarack can be obtained for fuel, but no coal was seen. There are no minerals nor stone quarries. Bears, wolves, ducks and geese were the only game noticed.—*J. C. Baker, D.L.S., 1907.*

55 & 56. (*Outlines*).—We crossed Chip lake on the ice to section 28, township 54, range 10, and from there we used pack horses, following an old pack trail which runs due north crossing the north boundary near the northeast corner of section 32. The soil in township 56, range 10 along the meridian lines is well adapted for farming but in township 55 there is more muskeg and swamp. In township 56 the surface is rolling and covered with second growth poplar. In township 55 the surface is rolling but covered with large poplar, spruce and willow. No timber of value was seen along the meridian lines. The south branch of Paddle river crosses the east boundary of section 13. It contains fresh water, is about fifty links wide and from three to six feet deep. About three feet of snow was on the ground at the time of survey (March) while the weather was very cold. Plenty of dry tamarack, jackpine, spruce and poplar can be obtained for fuel. No stone quarries or minerals were found. No game of any kind was seen.—*J. C. Baker, D.L.S., 1907.*

*Range 11.*

53. I reached this township by the Jasper or Yellowhead pack trail, which passes through the southern part of the township. The trail was in very poor condition. The soil is black loam and clay, suitable for farm purposes. The surface is level and covered with poplar, spruce, tamarack and willow. There is spruce and tamarack suitable for timber in sections 1, 2, 3, 4, 9, 10 and 11. It is from eight to sixteen inches in diameter. No hay is found. There are several small creeks in this township, the water of which is fresh. The land is not liable to be flooded and no water-power occurs. The climate was cold and wet at time of survey (June) with no summer frosts. Fuel consists of plenty of dry spruce, tamarack and poplar, but no coal, stone quarries nor minerals are found. Game consists of moose, deer, bear, &c.—*J. C. Baker, D.L.S., 1907.*

54. I reached this township by making a pack trail along Lobstick river. The trail is very poor. This township is nearly all muskeg. If the land can be drained it will be suitable for farming. The surface is level and covered with small poplar, willow, swamp spruce and tamarack. There is no timber nor hay in this township.



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 11—Continued.*

Lobstick river flows through this township, through sections 18, 17, 16, 9, 10 and 3. No water-power is found. The climate was warm at time of survey (September) with no summer frosts. Fuel consists of plenty of dry spruce, tamarack and poplar, but no coal, stone quarries nor minerals are found. Game is moose, deer, bear, &c.,—*J. C. Baker, D.L.S., 1907.*

*Range 12.*

53. I reached this township by the Jaspar or Yellowhead pack trail. This trail runs through the southern part of the township. The trail at the time of survey (July) was in very poor condition. This township is level and covered with a thick growth of poplar, spruce and willow. There is some large spruce but not in sufficient quantity for timber. When cleared, the soil, which is mostly black loam and clay, will be suitable for farm purposes. In section 6, near Lobstick river there is some hay land, but no other hay lands were seen. Lobstick river flows along the west boundary. The water is fresh. There is also a number of creeks, but no water-power. The climate was wet and cool at time of survey, with no frosts. Fuel consists of plenty of dry wood, but no coal was seen. There are no stone quarries nor minerals. Game consists of deer, moose, bear, wolves, &c.—*J. C. Baker, 1907.*

54. I reached this township by making my own pack trail along Lobstick river. The trail in many places was very bad. This township is nearly all muskeg and under water, not suitable for farming. It is level and covered with poplar, willow and swamp spruce and tamarack. There is no timber except a small amount along Lobstick river. This occurs in sections 19, 20 and 21. This timber is spruce and tamarack varying from ten to twenty-four inches in diameter. There are no hay lands. Lobstick river flows along the west boundary, north boundaries of sections 19, 20, 21 and east boundaries of 22, 14 and 13. It is about sixty feet wide and varies from two to ten feet deep. The water is fresh. There are no water-powers. The climate was warm at the time of survey (September) with no frosts. Fuel consists of plenty of dry poplar, spruce and tamarack, but no coal nor minerals were found. Game consists of moose, deer, bear, wolves, &c.—*J. C. Baker, D.L.S., 1907.*

*Range 13.*

52. The surface of this township is mainly rolling, or gently rolling and well wooded with spruce and jackpine, running from about five to ten inches in diameter. Intermingled with the spruce and jackpine in many places are scattered poplar, and there are also considerable areas wooded with aspen and balsam poplar from four to fourteen inches in diameter, and occasionally a few birch trees about five or six inches in diameter are met with. I was unable to properly explore the whole township, but apparently the greater portion of it is similar to the northerly part which is well fitted for settlement, being mostly high land, rolling enough for good drainage, and well watered with many small creeks, varying from one to four or five feet in width, and having a depth of one or two feet. These creeks generally flow with a good current, and their waters are fresh and soft.

Carrot creek flows through the northwestern part of the township in a valley about a quarter of a mile wide at the bottom, and three-quarters of a mile wide at the top; the bottom of the valley being depressed about fifty feet below the level of the surrounding country, and mainly consists of boggy hay land interspersed with clumps of willow brush.



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 18—Continued.*

The soil in the higher portions of the township is principally clay, or clay loam with a light covering of black loam, though in the depressions, or swampy portions, the soil is black muck or peaty loam.

This township though mainly wooded throughout could be cleared without a great deal of difficulty and should prove a very desirable location for settlers. The soil is well adapted for the successful production of the various grains and vegetables usually grown in the province of Alberta. Very little of the timber in this township is suitable for being converted into lumber but timber for building houses, fuel and fencing can be obtained on any quarter section in it.—*Geo. Ross, D.L.S., 1907.*

53. I reached this township by the Yellowhead pack trail which passes through the southern part of the township. It was in very poor condition at time of survey (July). The soil in this township is fairly good being black loam and clay subsoil. It is suitable for farm purposes. The township is gently rolling, covered with small poplar and willow. There is no timber in this township. No hay meadows are found. Carrot creek flows along the western boundary of this township. It is about sixty feet wide and two to four feet deep. The water is fresh. The land is not liable to be flooded. It was fine summer weather with no frosts at the time of survey. Plenty of dry poplar can be found anywhere. No coal, stone quarries nor minerals were found. Moose, deer, bear, wolves and other small animals were seen.—*J. C. Baker, D.L.S., 1907.*

53. This township is rolling and consists of a succession of ridges from about fifteen to fifty feet high, with wide intervening valleys. The south boundary in general runs through a thick growth of live timber, spruce and jackpine, mixed with poplar and also tracts of aspen and balsam poplar, the trees varying from four to twelve inches in diameter. The Yellowhead pass pack trail traverses this township from east to west, keeping about three-quarters of a mile north of its south boundary. This trail in the eastern portion of the township passes through a spruce *brulé*, with some patches of live spruce averaging eight inches in diameter for about two miles, then west of this it passes through some very soft swampy ground with live spruce for about a mile and a half, then comes out on higher ground well wooded with poplar from six to twelve inches in diameter, then winds westerly through some comparatively open patches of rolling land with poplar and willow brush and a good growth of grass and past an occasional old beaver meadow. The south part of section 5 and the southwest part of section 4 is heavily wooded with poplar from four to fourteen inches in diameter, but the greater portion of the township is *brulé*, and comparatively open, the timbered area in general only reaching about half a mile north of the south boundary, and even in this there are strips of timber killed by fire. In going west from Lake St Ann, by the Yellowhead pass trail, our first view of the mountains was obtained from the top of a ridge, about midway between the east and west boundaries of this township. The soil is mainly light sandy loam, although clay soil with a light covering of black loam predominates in the wooded portion near the south boundary. The greater part of the township can be readily cleared, and would be well adapted for grain growing, gardening or mixed farming, and should be quite desirable as a location for settlers.—*Geo. Ross, D.L.S., 1907.*

54. I reached this township by an old Indian pack trail which follows along the east bank of Carrot creek. The trail was in very poor condition. The soil is nearly all muskeg, not suitable for farming. This township is level and covered with poplar, willow, tamarack and spruce. There is no timber, the tamarack and spruce found being small. No hay land is found. Carrot creek flows through the



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 13—Continued.*

western part of this township. The water is fresh. No water-power occurs. The climate was warm at time of survey (August) with no frosts. Fuel consists of dry poplar, spruce and tamarack, but no coal was seen. There are no stone quarries nor minerals. Moose, deer, bear, wolves, &c., were seen.—*J. C. Baker, D.L.S., 1907.*

*Range 14.*

52. The northern portion of this township is mainly rolling land, generally high, and when cleared would be well adapted for cultivation. It is watered by several small creeks running northerly into a tributary of Carrot creek, which flows easterly through the southern portion of township 53, in this range. On section 36 there is a fine woods of aspen and balsam poplar, from which good logs, suitable for building timber or for being converted into lumber, can be obtained. In the northern parts of sections 32 and 33, in the valley of the creeks draining this part of the township, there is a considerable area of *brulé* with dead standing spruce, but the remainder of the township, except an occasional small area, is heavily timbered with poplar, spruce and jackpine suitable for the ordinary requirements of settlers. I did not explore the southern part of this township, but apparently all of it is fairly high and rolling land, not broken by true muskegs, although in the bottoms of some of the valleys or depressions the surface has become rather spongy owing to the excessive amount of moisture retained by the covering of moss. The soil is principally clay, under a shallow covering of black loam, but on the tops of ridges in many places the subsoil is gravelly, and in the depressions, or bottom of lower land between ridges the soil is black muck or peaty loam. As far as I can judge the whole of this township is well adapted to meet the ordinary requirements of settlers.—*Geo. Ross, D.L.S., 1907.*

53. The surface of this township is rolling, with the ridges or higher elevations of land running from about ten to seventy feet above the depressions, or lower intervening land. The Yellowhead pass trail traverses the township in an easterly and westerly direction, about a mile or a mile and a half north of the south boundary of the township. The southerly portion of sections 1 and 2 is well wooded with poplar and spruce, varying from about six to twenty-one inches in diameter. Between the Yellowhead pass trail and the south boundary of the township, a tributary of Carrot creek flows easterly in a valley of partially open land, on which there is a good growth of grass, but the soil is rather soft and spongy, owing to the soakage of water from the adjoining higher land, but when cleared and drained would form very desirable grazing grounds. North of this valley and south of the trail in the western half of the township there is a very fine wood of poplar and spruce, the trees being in general from four to fourteen inches in diameter. The wooded portion of the township lies mainly between its south boundary and the trail, but there are also some groves of fair sized poplar and jackpine to be found north of the trail, though the greater portion of the surface of the whole township is *brulé*, with a fairly good growth of grass. The township is well watered throughout by many small creeks, having a good supply of pure water, and along the courses of some of them old beaver meadows with good pasturage are occasionally found. The soil in the poplar woods is mainly clay, or clay loam, but in the greater portion of the township the soil is sandy loam. Taken as a whole, this township is quite well adapted for grain growing, gardening or mixed farming, and timber for the ordinary requirements of settlers can be readily obtained.—*Geo. Ross, D.L.S., 1907.*

54. I reached this township by following the Grand Trunk Pacific pack trail, which passes through section 12, 14, 15, 9, 8, 17 and 18. The soil consists of alter-



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 14—Continued.*

nately muskeg and sand ridges, not suitable for farming. The surface is gently rolling and covered with small poplar, jackpine and willow on the ridges and spruce and tamarack on the muskegs. There is no timber in this township. No hay is found. There is one small creek flowing north through the centre of the township. The water is fresh. There is also a small lake in section 19, too small to traverse. No water-power occurs. The climate was clear and fine at time of survey (September) with frosts at night. Fuel consists of plenty of dry poplar, jackpine, tamarack and spruce, but no coal, stone quarries nor minerals are found. Game consists of moose, deer, bear, etc.—*J. C. Baker, D.L.S., 1907.*

73. The greater portion of this township will make excellent farms some time, but at present there are not prairie openings of sufficient area, to induce the settler to stop there now. There are numerous small spruce muskegs nearly dry, a large one at the southwest corner and another near the northeast corner. Both of these large muskegs are at present very soft and unsafe for pack trains to cross and the timber adjoining these muskegs is not large enough nor in large enough quantities to be of much value except possibly for settlers' uses. Large poplar is found in belts along the east boundary but it is decaying rapidly. A creek flowing through the westerly part of the township, crosses the north boundary in section 31. The average width is twenty-five feet and the depth of water three inches in the rapids. Very little current can be noticed except where the water is shallow. The banks rise from twenty-five to seventy-five feet high, and prairie spots are found occasionally along this creek. Another small stream leaves the township near the northeast corner. This flows northeasterly into the lake about a mile and one-quarter east of the east boundary of township 74, range 14. This small stream about four links wide and two inches deep contains good water and is said by the Indians to have its head in a small lake east of the wagon road and south of the large muskeg. Several other water courses were crossed which had water in pools within their banks but no running water. These came from the higher lands to the south and east of this township. The wagon road which crosses the base line in section 2 leaves the township in section 34 and is quite good as far as seen. It is used occasionally by people travelling light, but it would require much improvement for loaded wagons. No rock, coal, or game and very few sloughs or hay meadows were seen.—*Henry W. Selby, D.L.S., 1907.*

75. That part of the township north of Lesser Slave lake lies with a general descent towards the lake into which the greater part of it is drained. The settlement survey lying within its boundaries takes in nearly all the prairie but there has been a good deal of the timber suitable for sawlogs and much firewood cut for the uses of the settlement so that it would not be difficult to clear up many of the farms not embraced within the settlement survey. There are several hundred thousand feet of spruce which could be cut yet, and should a fire run over the slashed portion of the bush it would severely damage that now standing. A road has been cut about sixteen feet wide from the village southeasterly, which leaves the township in section 24 and intersects Slave lake about a mile east of the township. This road is used mainly by the freighters in the winter to avoid the dangerous ice around Shaw point. It is also used by people in the summer who are travelling with light loads. The soil generally is loam with a sandy clay subsoil and will make good farming land when once cleared. Shaw point and for some little distance inland is composed of coarse sand, gravel and stones partly covered by sand and leaf mould. At the time of low water there is a strip of land along the west side of the settlement survey which makes good pasture land especially those portions of it west of the main outlet of Buffalo Bay, but this is liable to be flooded at any time. There is a narrow strip of land a



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 14—Continued.*

little over six chains wide lying to the west of Indian reserve No. 150 A which being thickly covered with brush is now considered too wet for farming, but when cleared it will make good farming or meadow land. There are two squatters, one on section 31 and the other on section 12 who have good houses but very little clearing, neither of them living there at the time of survey. Water found in the township is very good, one spring found near the southeast corner of section 27 has a strong mineral taste. If this was analyzed it might prove to be of commercial value. There are no hay lands except those mentioned along the west boundary and along the lake shore at low water. I did not see any coal or stone quarry on these lands and no game of any kind although moose were killed this spring three miles east of these lands.—*Henry W. Selby, D.L.S., 1907.*

*Range 15.*

52. This township contains some areas of good rolling high land with clay soil well adapted for grain growing, when cleared, but the greater portion of it is covered with spruce and tamarack swamps, the soil in which consists of a black muck or peaty loam. Many of these swamps if cleared would not retain so much moisture and would become drier. Many of them could be quite readily drained, and no doubt in time will become valuable agricultural land. On the north east quarter of section 36 there is a fine poplar woods, the trees in which vary from about four to twelve inches in diameter, and on the west side of the north half of section 35 and east side of the north part of section 34, is a ridge rising between swamp lands on either side, which is well wooded with poplar, cotton-wood and spruce from six to twenty inches in diameter. These and a few similar tracts of high land are the most valuable portions of this township. Some of the timber on these tracts is suitable for lumber, but in general it would be mainly useful in building log houses, and in providing timber for fuel, fencing, &c. For the latter purposes, spruce and tamarack from the swamps is also available. The western and southwestern portion of this township is watered by Wolf creek, a fine stream of pure water, about eighty feet wide, and from two and a half to five feet in depth, flowing with a fairly rapid current. In section 31, it flows through a valley in which the bottom lands are prairie mixed with scrub and groves of poplar. The open land has a good growth of grass, peavine and vetch, and is well adapted for grazing. The banks of the valley of Wolf creek are about thirty or forty feet high and are generally sloping grassy banks, but in places they are steep cutbanks, and in one place in the north half of section 31, an eighteen-inch seam of coal is exposed. Intermingled with the spruce and tamarack swamps in this township are many ridges the surface of which is *brulé*, with willow and poplar brush, or a growth of young jackpine. On the ridges with light *brulé* there was a good growth of wild strawberry vines, bearing a fine crop of large strawberries of excellent flavour. The timber in the swamps is not generally larger than eight inches in diameter, and would average about five inches. The soil in the swamps is black muck or peaty loam, and on the ridges, generally it is light sandy loam. In the valley of Wolf creek the soil is a rich dark alluvium. Speaking generally this township cannot be classed as being well adapted for farming operations, on account of so much of its area being covered with spruce and tamarack swamps, though there are some good arable tracts, more particularly in the north-eastern part.—*Geo. Ross, D.L.S., 1907.*

53. This township is composed mainly of a succession of ridges from fifteen to forty feet high, with intervening swamps, covered with spruce and tamarack from three to six inches in diameter. The Yellowhead pass trail runs westerly through



## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 15—Continued.*

the southerly portion of the township, except in the west half of section 5, and the east half of section 6, where it takes a southerly loop into the northerly part of township 52. Along the trail, there is a considerable amount of light brulé in which there is a good growth of grass, and interspersed are groves of young or medium-sized poplar, and also considerable areas of thick poplar and willow brush. In the southeast portion of section 1, there is a fine wood of poplar, averaging from four to twelve inches in diameter, and on a ridge which extends into the southeast part of section 3 and the southwest part of section 2 is another small area of good poplar timber. About midway between the east and west boundaries of the township and about a quarter of a mile north of the Yellowhead pass trail, there is a beautiful lake about a mile and a half long, and a mile wide, that is mostly surrounded by spruce about four or five inches in diameter. The banks of this lake are well defined though in many places they are not more than two or three feet high. Towards the southern part of the lake there is an island of about an acre in extent, elevated about eight or ten feet above the water and covered with a heavy growth of spruce and jackpine. In addition to Wolf creek which flows northerly through the southwesterly part of the township, it is well watered with numerous small creeks having a good supply of pure water. The soil on the ridges is mainly light sandy loam, well adapted for gardening, and fairly suitable for grain growing, but the township on the whole is rather broken by swamp to be of much value to settlers who wish to make a success of grain growing, unless a good deal of draining is first done. The timber found in general is only suitable for fuel and fencing.—*Geo. Ross, D.L.S., 1907.*

54. I reached this township by following the Grand Trunk Pacific pack trail. This trail passes through sections 24, 23, 22, 21, 20, 19 and 18 of this township. The trail is in good condition. The soil is black loam and clay. It is suitable for farm purposes. The surface is rolling and covered with small poplar, jackpine, willow and windfall. There is a small amount of timber in sections 11, 12, 2 and 1 of this township, consisting of tamarack and spruce, varying in size from ten to twenty-four inches in diameter. There is some hay land to be found in the flats along McLeod river, which flows along the north boundaries of sections 19, 20, 21, 22, 23 and 24. It is a fine stream five hundred feet wide and varies from one to ten feet in depth. At time of survey (October) it was shallow but usually it is very difficult to ford. McLeod river could be used for water-power by damming the stream. The climate was fine and clear at the time of survey, with frosts. Fuel consists of plenty of dry spruce, tamarack, poplar and jackpine, but no coal was seen. Sandstone might be obtained along the banks of McLeod river, but no minerals were seen. Game consists of moose, deer, bear, wolves, etc.—*J. C. Baker, D.L.S., 1907.*

73. Large muskegs are seen in various parts but these should not be permanently a detriment, as the township being high, these can be easily drained. The soil is three to ten inches of black loam on hard clay subsoil and produces rich vegetation. The timber generally is not of much value, most of the spruce and poplar being bad at the heart and easily broken off by the wind. Several small creeks or watercourses were crossed and the water was good, especially in one flowing easterly through section 25. The west branch of this rises in the westerly part of the township and although only a small stream three links wide and three inches deep it appears to be flowing quite steadily when it was crossed, while many others were quite dry.—*Henry W. Selby, D.L.S., 1907.*

74. This township is very well supplied with wagon roads, one passing through the northwesterly sections 18, 19, 30 and 32 from the Prairie River settlement to



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 15—Continued.*

Lesser Slave Lake P.O. and the other from the same settlement to the lake at the mouth of Sucker creek, and passing through sections 18, 17, 16, 15, 14 and 13. These roads except at the time of wet weather are very good for present traffic. The soil is black loam from eight to eighteen inches on clay subsoil. The surface is undulating with a very gentle descent towards the northeast. A large spruce swamp occupies the greater part of sections 25 and 26 and extends into the Indian reserve. The timber in this swamp is generally small but around the outer edge a few spruce trees from twelve to sixteen inches in diameter are found. The poplar on the south tier of sections is from four to fourteen inches in diameter and with a few spruce and willow bunches fairly covers them through the remainder of the township. The poplar is in belts and bluffs with prairie openings and willow bunches. The greater part of sections 13, 14, 15, 16, 19, 20, 29, 30, 31 and 32 are prairie with poplar bluffs and bunches of willow along the watercourses. Some of these sections have been occupied for several years and the growth of grain, potatoes and hay is amazing. Several well defined watercourses are noticeable within the township, but only three appear to be permanent creeks. These were Travers creek, Bridge creek and the west branch of Sucker creek. The water in each of these is good though slightly alkaline; this of course is more noticeable later in the season. There is a slough which lies across sections 29, 28 and 27 in which the water is from four to eight feet deep and over a chain wide. It has the appearance of once having been a river channel which had been dammed by beaver in places and gradually filled up so that there is no inlet or outlet except at flood time. The dry channel is seen through the willows both east and west of that part which crosses sections 27, 28 and 29. Hay grows in abundance on all the prairie sections mentioned and in addition to these large hay meadows are found on sections 21, 22, 27, 28, 34 and 35, upon which grass grows luxuriantly but the ground is so rough and wet generally, that a good deal of work would be required before machinery could be used. No water-power of sufficient capacity could be developed on either of the small streams flowing through this township. Summer frosts occur nearly every month, but they do not injure the grain where the seed has been grown in the district. The fuel of this part of the country is poplar and willow. No coal seams have been found neither are there stone quarries nor minerals known to exist there. Outside of the prairie wolf, game is very scarce. This township is best adapted to mixed farming, the growth of coarse grain and stock raising being best suited to the condition existing. It is very possible that minerals will be found and a large population will require all kinds of produce in the adjacent hills to the south, as well as in the foothills of the Rocky mountains where large deposits of coal and other minerals have already been found. Settlement cannot advance very fast without better means of transportation to the markets, for the produce which can be grown in this beautiful country.—*Henry W. Selby, D.L.S., 1907.*

**75.** This township, according to the Indian legends, was once under the water of Lesser Slave lake, but through the process of time it has been built up by the deposit or sediment brought there by the rivers and creeks, all of which flow from the west and southwest draining the higher lands. The northeasterly ten sections are partly flooded at the time of high water but not for very long, since upon these sections large quantities of hay are annually put up for the use of the settlement. Sections 29, 30, 31 and 32 are at present too rough and hummocky and have too much willow and dead timber lying upon them to be of much use, although through it all there is a fine growth of hay which cannot be cut. The rest of the township is high enough to make good farms for mixed farming with a depth of fourteen to eighteen inches of black loam on a sandy clay subsoil. Many prairie spots are found through this



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 15—Continued.*

portion and the bush is mainly willow with bluffs of poplar and occasionally a few spruce, but there is little timber of any commercial value, and what little there is will not be sufficient for the needs of the settler. What is called the Prairie River road enters the township in section 4 and running northeasterly, leaves it in section 24. There are other wagon roads used by hay makers and others and in fact there is very little difficulty in opening roads in this township anywhere on account of the many openings in the willow brush. Two small creeks run through the township in a northeasterly direction to the west arm of Lesser Slave lake and are slightly alkaline. The actual water running is probably not more than three feet wide and three inches deep but there are many places where the water lying in the bed of the couleés in which these creeks run is three or four feet deep and from sixty to one hundred links in width. The banks of these couleés rise from the water near their outlet, to about fifteen feet at the south boundary of the township. Two squatters were found on sections 7 and 15 at the time of survey and since then three others have begun breaking and building on sections 6 and 8. These squatters had one hundred and five acres in crop this year, and have large numbers of horses and cattle besides the necessary buildings. The surface being so nearly level no outcrops of coal or stone were found, and except duck and geese no game was seen.—*Henry W. Selby, D.L.S., 1907.*

77. The south one-third of this township is composed of gently rolling land at an elevation of about two hundred and fifty feet above Lesser Slave lake. It is conveniently situated for farming purposes, the Peace river road cutting across the southwest corner of sections 5 and 6. The richness of the soil is shown by the luxuriant growth of grass, peavine and vetch which grow in the open lands. The ridges are lightly covered with poplar and a few scattered spruce, and between the ridges bunches of willow, and a few willow shrubs. Most of these sections when cleared ought to make beautiful farms. Sections 5, 6 and 7 have had fires on them which has left parts of them almost cleared. A large muskee lies to the north of these sections which occupies the northerly part of the township and from it several fine streams of water of good quality take their origin. No stone, rock or coal was found and no lay lands, as the timber grows quite evenly over these sections. There are a few spruce around section 10 which would make building timber or sawlogs. No game of any kind was seen.—*Henry W. Selby, D.L.S., 1907.*

*Range 16.*

52. This township is rolling or gently rolling land, the surface being a succession of low ridges with *brulé*, having a growth of poplar and willow brush, or young jackpine and intervening swamps with spruce and tamarack, from three to eight inches in diameter. In some of the lower or swampy portions of the township, *brulé* is also met with, and in some of the *brulé*s there is a good deal of windfall. Moose creek runs through the southwestern portion of the township and in its vicinity there is a considerable portion of fairly open land with clumps of medium sized spruce. This creek is a fine stream of good water, about twenty feet wide and from one to four feet deep. It flows on a stony bed in a valley about sixty feet deep, and half a mile wide, and along its banks a large amount of good sandstone is exposed. The soil in this township varies from clay to light sandy loam on the ridges, and in the swamps it is black muck or peaty loam, with a clay subsoil. Many of these swamps can no doubt be readily drained and will in time become desirable agricultural land, but at present, or in the near future, much of this township could not



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 16—Continued.*

be classed as a desirable location for settlers. The soil on the ridges is in general suitable for growing small fruits or for gardening, and in the latter part of July and the first part of August, when the north boundary of the township was surveyed, a fine crop of ripe strawberries was found on all these ridges, where the *brulé* was light or comparatively open. The Yellowhead pass trail runs through this township near its northerly boundary, and takes an occasional loop into township 53, north of it.—*Geo. Ross, D.L.S., 1907.*

53. The southeastern part of this township is mainly swamp, with spruce and tamarack from three to six inches in diameter. This swamp is not in one continuous stretch, but is broken or divided up into smaller areas by low ridges, having a growth of jackpine or spruce about five inches in diameter, though in many places the ridges are covered with *brulé* having a small amount of windfall and a growth of poplar and willow brush. The southwest part of the township is principally light *brulé* or partly open land with patches of poplar and spruce. In the south halves of sections 5 and 6 there are some peculiar ridges about ten or fifteen feet high composed of drift sand. McLeod river runs through the northwestern part of the township, but I did not explore the land in its vicinity nor the northern part of the township. The greater portion of the southern half of this township is rather too swampy to make good agricultural lands, though there are some tracts of good second class land in it, with a clay subsoil under a shallow covering of black loam that when cleared would be suitable for grain growing.—*Geo. Ross, D.L.S., 1907.*

53. One can pass anywhere in this township with pack horses. The soil is mostly black loam and clay. It is suitable for farming. The surface is gently rolling except near the mouth of Wolf creek, where it is broken. It is covered with poplar, willow, small jackpine, spruce and tamarack, but there is no timber. Plenty of hay is found in the flats of McLeod river, which runs through the centre of this township. Wolf creek also passes through this township. It is a stream about one hundred feet wide and varying from two to six feet in depth. The water is fresh. Water-power could be developed either on Wolf creek or McLeod river by damming. The weather was fine at the time of survey (November) with frosts. There are plenty of dry poplar, spruce, tamarack and jackpine, but no coal was seen. Some sandstone was found along McLeod river, but no minerals were seen. Game consists of moose, bear, deer, wolves, &c.—*J. C. Baker, D.L.S., 1907.*

54. One can pass anywhere in this township with pack horses. The soil is mostly black loam and clay. It is suitable for farming. The surface is gently rolling and covered with small poplar and willow, but there is no timber. Plenty of hay can be obtained in the flats along McLeod river, which flows through this township. It is a fine stream, being about five hundred feet wide, containing fresh water and varying from one to ten feet at low water mark. Muskeg river also flows east, through this township and empties into the McLeod. It is a small stream about sixty feet wide, two to six feet deep and contains fresh water. The McLeod can be used to develop water-power. There was fine weather at time of survey (November) with frosts. Fuel consists of plenty of dry wood, poplar, jackpine and spruce, but no coal, stone quarries nor minerals were found. Game consists of moose, bears, deer, wolves, &c.—*J. C. Baker, D.L.S., 1907.*

77. The southeast quarter of this township will make first class farms. The soil is clay and black loam on clay subsoil, and grows peavine vetch and grass where the timber is not too thick. The Peace river road passes in a northwesterly direction through these sections, and the timber along this road is open poplar bush and willow



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 16—Continued.*

bunches. Several open prairie spots occur while the whole is well watered with small streams of fresh water. The timber on the rest of the surveyed portion of this township is mainly poplar two to twelve inches in diameter with scattered spruce, and willow between the ridges. A few large spruce were seen on section 10 being around a portion of a large spruce muskeg extending into the southwesterly portion of the township. Another road has been cut from the Big Prairie settlement northerly through sections 2, 11 and 14 to the Peace river road which is used by freighters and others to shorten the distance coming from the south and west. No rocks, coal or hay lands of any size nor game were seen.—*Henry W. Selby, D.L.S., 1907.*

*Range 17.*

51. This township is mainly a series of ridges of brulé, and intervening valleys of very soft muskeg. The ridges are about thirty or forty feet high, but some of them rise to a height of about one hundred and fifty feet. Though the ridges in general are brulé one instance was noticed of a ridge about two miles long, being heavily timbered with jackpine about two feet in diameter.—*Geo. Ross, D.L.S., 1907.*

52. McLeod river flows through the northern part of this township, entering it at the northwest corner of section 31 and flowing out northerly at the northeast corner of section 35. The river has an average width of about four hundred feet in this vicinity, and in general has steep banks about fifty or sixty feet high, and from the top of the banks the land has a gradual upward slope for some distance back. In some cases, the river runs in a valley in which there are wide flats and good hay meadows. The surface of the northern part of the township in general is high and rolling and the greater portion of it is brulé, being well burnt off, and now contains little timber of much value, although there are scattered small areas of medium sized spruce. The brulé in general has a small amount of fallen timber and a growth of either poplar or jackpine brush. The south one-third of the township is mainly a succession of muskegs, lying between a series of brulé ridges, with small poplar and jackpine, and this portion of the township is not suitable for settlement. The soil is mainly light sandy loam or sand, and in the swampy or lower lands in the northern part of the township the soil is black muck with a clay subsoil. In the northern two-thirds of the township, there are considerable areas of fairly desirable agricultural lands, but the greater portion of it is rather too light for successful grain growing. The Yellowhead pass trail runs through the northern part of this township and crosses McLeod river by a ford about one and a half or two miles west of the east boundary of the township. This township is well watered by many small creeks which flow into McLeod river.—*Geo. Ross, D.L.S., 1907.*

53. I reached this township by making my own pack trail. 'Jock's trail' passes along the west boundary of this township. It is in fine condition. The soil is black loam and clay. It is suitable for farm purposes. The surface of this township is level except near the McLeod where it is rolling. It is covered with poplar, willow, spruce and tamarack. It is very heavy in the northern part but there is no timber in the township. There are no hay lands. McLeod river flows through the southern part of the township. There are also some creeks. The water is fresh in all. Water power may be obtained by damming McLeod river. Fine weather existed at time of survey (November) with frosts. Fuel consists of plenty of dry wood such as tamarack, spruce, poplar and jackpine. Small pieces of coal were seen along McLeod river. Some sandstone along the McLeod river might be used for building purposes. No



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 17—Continued.*

minerals were seen. Game consists of moose, deer, bears and wolves.—*J. C. Baker, D.L.S., 1907.*

53. McLeod river runs through the southeasterly corner of the township, and along its southeastern bank there is an outcrop of sandstone about twenty feet thick; on the northwestern bank the outcrop of sandstone is about eight feet thick. The face of this sandstone is weathered and rather soft, but no doubt good building stone can be easily quarried here. Moose creek also runs northerly through section 1, in a wide and deep valley, on its way to join the McLeod. Along its banks also there is an outcrop of sandstone. In the vicinity of McLeod river the land is inclined to be high rolling and hilly. The whole southern portion of the township, in general, is high, dry and rolling, but there are a few depressions where the land is comparatively low and moist and in the southeast corner of the west half of section 3 there is a small lake, surrounded by marshy land having a growth of tamarack and spruce from four to eight inches in diameter. With the exception of the swamp mentioned, and a few small areas of spruce of medium size, the southern part of the township is mainly *brulé*, having a moderate amount of windfall and a growth of willow brush, or young poplar and jackpine. In the southern part of the township, particularly in the vicinity of McLeod river there is a good deal of light sandy soil, but interspersed through this part of the township are also areas of clay or clay loam and although a cursory inspection would indicate that the soil in general is rather too light for successful farming operations, I have no doubt the greater part of the township will be found to contain considerable areas on which grain growing and gardening can be carried on successfully.—*Geo. Ross, D.L.S., 1907.*

*Range 18.*

52. This township in general is high and rolling and wooded with poplar, spruce and jackpine, from three to seven inches in diameter. McLeod river meanders through the western part of it in a wide and deep valley in which there are several good hay meadows. All along the river are found many clumps of spruce, the trees averaging about ten inches in diameter, and running to a height of about sixty feet, but the timber in general is only fit for fuel or fencing, though the better portion of it is suitable for building log houses. The soil is mainly clay loam, but several sandy ridges are met with, and in the eastern part of the township a considerable number of swamps with tamarack and spruce are to be found. The greater portion of the township is well fitted for settlement, and when cleared will be found to be well adapted for grain growing and mixed farming.—*Geo. Ross, D.L.S., 1907.*

53. A loop of McLeod river runs through the southern part of this township flowing in at the south through the west part of section 4 and returning south again through the east half of section 2. The river in this township flows mostly through an open flat, or valley in which there are good meadow and farm lands. Sundance creek flows into McLeod river a short distance south of the point where its most northwesterly loop takes a sharp bend to the east, forming an eddy in the river, and on the high bank of the river, to the north overlooking this eddy a store in which general merchandise is sold, was opened, about two years ago. This place is called 'big eddy;' and on the bottom lands, on the north side of the river, just east of 'big eddy' Mr. A. Sinclair, who squatted here, has erected a good log house and stable, and has a nice garden, where he successfully grew last season, onions, lettuce, cabbages, carrots, parsley, potatoes, &c., and had also a fine crop of wheat on a small patch which he sowed as an experiment. Mr. B. Berthoux, the storekeeper also had



## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 18—Continued.*

good success with a garden, which he cultivated on the upland adjoining the store. To the north of the river and Sundance creek the land is high and rolling and in general is covered with a growth of small or medium sized poplar. In going north from the top of the steep bank of the river at big eddy the land has an upward slope for a distance of about thirty chains and there attains a height of about two or three hundred feet above the river then for about half a mile farther north the surface is fairly level, with scattered medium sized poplar, then going farther north, the land is heavy rolling, with thick poplar and willow brush, and scattered groves of jackpine from four to ten inches in diameter. A few swamps with spruce and jackpine are also to be found and towards the central part of the township a steep ascent of two or three hundred feet is met with, which takes one up to a higher plateau, which is more or less rolling and covered with brush, the surface being broken by an occasional valley with thick brush or a ridge with balsam poplar. The southwestern part of the township is watered by Sundance creek and its tributaries. This creek flows through a wide and deep valley in which there is a good deal of land that is more or less open, and covered with a fair growth of grass, that makes it of value as a grazing ground. Sundance creek is a fine stream of pure water, about twenty feet wide, and from about two to five feet in depth, flowing with a fairly rapid current. In the vicinity of the creek, groves of fair sized spruce and jackpine are met with. Going southwesterly from the creek the land rises to a height of more than a hundred feet above it, the surface being considerably broken by spruce and tamarack swamps. The higher land or ridges separating these swamps is mainly *brulé*. The portion of this township lying north of McLeod river and Sundance creek, is well adapted to agricultural purposes in general, the soil being mostly a rich brown loam. The southwestern portion, south of Sundance creek is not so desirable for farm lands, as it is more broken and is rated as third class land. The Yellowhead pass trail traverses this township passing through big eddy, and generally keeping a short distance north of McLeod river and Sundance creek. The surveyed line of the Grand Trunk Pacific railway also goes through this township, passing in the immediate vicinity of 'big eddy.'—*Geo. Ross, D.L.S., 1907.*

54. This township is somewhat similar to the northern part of township 53. adjoining it on the south, but heavier rolling. The soil in it is mainly clay loam and well adapted for agriculture, but is rather too heavy rolling.—*Geo. Ross, D.L.S., 1907.*

*Range 19.*

52. This township is traversed by McLeod river and broken by numerous swamps muskegs and shallow lakes. The northeastern portion of the township consists of a succession of low ridges on which there is a growth of poplar from two to six inches in diameter, with intervening marshes, muskegs, and shallow lakes. There is also an occasional area covered with spruce and jackpine. In the northern part of section 36 there is a fine lake which also extends north into section 1, township 53. This lake is rather less than a mile across, and on its south side there is high, hilly land, well wooded with spruce and jackpine. In running the fourteenth base line west from the east boundary of range 13, no true muskegs were met with till this township was reached; and in this township the greatest chainage across any muskeg was about twenty-two chains. The land improves in the northwestern portion of the township and in the north part of section 32, in the vicinity of Whitemud, there is a considerable tract of good open meadow land. Whitemud creek, which is about seven feet wide and three feet deep, running with a fairly rapid current, flows through this meadow, and empties into McLeod river in section 31. On the banks of this creek,



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 19—Continued.*

in the valley of McLeod, a short distance above its junction with that river, are the ruins of a few shacks or log houses, which mark the site of a small village or trading post in which several half-breed families, principally engaged in trapping, lived some years ago. Near these ruins is also a small cemetery. The surveyed line of the Grand Trunk Pacific does not pass very far from Whitemud, and I have no doubt, that in the near future, Whitemud will spring into new life and become the centre of a thriving settlement. The Yellowhead pass pack trail, after turning northerly away from McLeod river, at big eddy, again approaches the river at Whitemud and follows it westerly, more or less closely, to 'the leavings' in range 21. In the valley of McLeod river, in the vicinity of Whitemud, are considerable areas well wooded with spruce and jackpine averaging ten or twelve inches in diameter. I did not examine the southern portion of this township but consider that it is somewhat similar to the northern part, which is rather too much broken to be well fitted for good agricultural lands. The soil is mostly a light sandy loam but there are considerable areas, such as is to be found in the vicinity of Whitemud, that will prove to be well adapted for farming. The timber is suitable for fuel, fencing, building, log houses, &c.—*Geo. Ross, D.L.S., 1907.*

53. This township is traversed by Sundance creek, which enters it some distance south of the northeast corner, then flows southeasterly to a point about a mile north of its south boundary, and two and a half miles west of its east boundary, then it turns and flows northeasterly into range 18, on its way to enter McLeod river at 'big eddy.' Sundance creek flows through a wide and deep valley, in which there are some small areas of high dry prairie land, and also some groves of fair sized jackpine. In the central portion of the township, along Sundance creek, there are some large swamps, partially open muskeg and partially wooded with tamarack. The southeastern portion of the township lies at an elevation of about a hundred feet above Sundance creek, and consists mainly of a succession of ridges, brulés, with second growth poplar, or poplar brush, and intervening swamps with spruce or tamarack, averaging about five inches in diameter. The south portion of section 1 is broken by a lake having a considerable area of marsh and muskeg along its north shore. In the southeastern portion of the township there are also a number of open marshes, about thirty or forty acres in extent, covered by two or three feet of water and having a growth of coarse grass. The south central portion of the township is broken by a number of small shallow lakes, and muskegs, which lie between ridges covered with brulé, having a considerable amount of windfall, and occasional poplar bluffs. In the southwest and central portion of section 6, is a wide ridge, well wooded with poplar. North and south of this ridge are fairly open flats, or meadow land with a growth of grass and small scrub. The south half of this township though considerably broken contains many areas of good agricultural land that can be readily cleared and brought into cultivation. The soil is mainly sandy loam or sandy clay, suitable for grain growing or gardening. The timber is mainly fit for the ordinary purposes of settlers, such as providing fuel, rails for fencing, and timber for the construction of log buildings. The Yellowhead pass trail traverses the southeasterly part of the township, and the surveyed line of the Grand Trunk Pacific railway also passes through the township. The northern portion of this township was not explored by me.—*Geo. Ross, D.L.S., 1907.*

52. McLeod river flows from west to east through the northern part of this township, keeping at an average distance of a little more than a mile south of its north boundary. It runs in a wide and deep valley, in the flats of which are several good hay meadows, but in general they are timbered with spruce, jackpine and cotton-



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 19—Continued.*

wood from eight to twelve inches in diameter. From the north boundary of the township to the top of the bank of the valley a distance varying from about a quarter to three-quarters of a mile, the land is nearly level or gently rolling, and is mainly brulé, with light scrub, but occasional areas of spruce, jackpine and poplar from two to five inches in diameter are to be found. The soil varies from light sandy loam to clay loam, on the higher lands, and in the swamps it is black muck or peaty loam. In the river valley, the soil varies from a rich dark alluvium to gravel. The portion of the township north of McLeod river is well fitted for settlement, and when cleared, and cultivated, will prove to be an area on which grain growing or mixed farming can be carried on successfully. The Yellowhead pass trail runs through the township from east to west, keeping a short distance north of McLeod river, and the surveyed line of the Grand Trunk Pacific railway follows along about the top of the north bank of the valley of this river.—*Geo. Ross, D.L.S., 1907.*

53. The southern portion of this township is mainly light brulé, through which run narrow belts timbered with poplar, spruce and jackpine, from two to five inches in diameter. The surface is rolling or gently rolling. Near the centre of the south boundary of section 6 a creek about twenty feet wide and one foot deep, with a very rapid current is crossed. This creek is the outlet of a small lake lying about a mile and a half north of the south boundary of the township, and as this creek has a heavy fall and a steady flow of water it would be readily available as a small water-power. The timber found in the township is only valuable for fencing or fuel. The soil varies through the grades of light sandy loam, clay loam and clay, and in a few small areas it is gravelly. The township as a whole is well fitted for settlement and when cleared, grain growing and mixed farming can be carried on in it with general success.—*Geo. Ross, D.L.S., 1907.*

*Range 21.*

52. McLeod river flows through the northerly part of this township from west to east, in a wide valley, depressed about sixty feet below the level of the adjoining lands. Along the river in the flats of this valley, there are several fine open hay meadows, varying in width from ten to forty chains. Other portions of the valley are wooded with spruce, averaging ten inches in diameter, or cottonwood from eight to fourteen inches in diameter, also in places, the valley is broken by ridges of gravel. In going north from the river, after crossing the bottom lands one passes up the bank of the valley, about forty feet high, then through a poplar wood about twenty chains wide, the trees averaging about eight inches in diameter, then through a belt of swampy land with spruce, then over a ridge about fifteen chains wide, timbered with poplar, next through a strip of mossy swampy land, wooded with spruce, then over an area of high brulé with a good deal of windfall, and a growth of small jackpine, and on the whole the greater part of this township is brulé, interspersed with small areas of poplar, spruce and jackpine, averaging about five inches in diameter though in places as already mentioned trees of larger size are met with. 'The leavings' on McLeod river in the western part of the township is an open flat or meadow, about forty chains long and thirty chains wide. At this place the Yellowhead pass trail leaves McLeod river, and runs westerly towards Athabaska river. From 'the leavings' also another loop of the trail, runs in a northerly and north-westerly direction into township 53, range 22, and passes around the northerly end of the high plateau or divide between McLeod and Athabaska rivers, and again turns southerly and southwesterly along the southeasterly side of Athabaska river, till it again joins the old trail near Sandstone creek. That portion of the trail between



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 21—Continued.*

'the leavings' and Sandstone creek, has not been much travelled during the past few years, having become blocked up by fallen trees and the travel went over the northerly loop, however during last season the more southerly and direct route was reopened and travel is now divided. The soil in township 52, range 21, is mainly light sandy loam, interspersed with small areas of stony clay, black muck, &c. In the valley of McLeod river, the soil is mainly a rich dark alluvium. The township as a whole is fairly well adapted for agricultural purposes. The timber is only suitable for the ordinary uses of settlers such as providing fuel, fencing and logs for buildings. The surveyed line of the Grand Trunk Pacific railway passes through the northern part of this township.—*Geo. Ross, D.L.S., 1907.*

53. This township is broken considerably by a number of lakes and swamps. Along the southern boundary, sections 1 and 2 are light brulé with second growth poplar, section 3, stony land with second growth poplar and jackpine, sections 4 and 5 are mainly light brulé, and the southwesterly part of section 5 is broken by a small lake. Section 6 is mainly mossy swampy land. The soil is principally sandy loam, with interspersed areas of stony clay. I did not explore the northern portion of this township, but apparently considerable areas of fairly good agricultural land are to be found scattered through it.—*Geo. Ross, D.L.S., 1907.*

84. (Peace River Landing settlement.) This settlement, situated east of Peace river and near North Heart river is on a flat about fifteen feet above the river. It is surrounded on the east and south sides by hills of six hundred to eight hundred feet above the river. There are ten lots of different sizes in the settlement. The soil is a deep black sandy loam resting on a clay and sandy clay subsoil. Grain and vegetables grow well. Good water is plentiful all through the settlement and wood for fuel is close by. This settlement is reached by the Lesser Slave lake and Peace River Landing wagon trail. There is no water-power, nor stone quarry, and no mineral of any description has been found there during the progress of the work. The people of the place cut their hay on top of the hills along the wagon trail. The Northwest Mounted police have their quarters south of North Heart river, farther up Peace river.—*J. B. Saint Cyr, D.L.S., 1907.*

*Range 22.*

52. The greater portion of this township is rough and broken; the northeastern part of it is swampy with spruce, five inches in diameter, or brulé, with a good deal of fallen timber, and a growth of young jackpine. The western part of the township is occupied by the high ridge, or divide between McLeod and Athabaska rivers. The greater part of this divide is covered with heavy brulé, on which there is a thick growth of young jackpine, though in places the jackpine is replaced with poplar and willow brush, or by a growth of spruce. Section 33 and the northwest quarter of section 34 on this divide is heavily timbered with spruce and jackpine from six to twenty-two inches in diameter, this tract of timber stretches southwesterly for a distance of about two miles. The easterly side of this high ridge or divide trends southwesterly parallel to McLeod river and forms the northwesterly bank of its valley. The valley of the McLeod, which occupies the southeasterly part of the township is the most desirable part of it and is well adapted for mixed farming or grazing lands. The soil in the valley, is a rich, dark alluvial deposit, and in the remainder of the township it is mainly a light sandy loam, fairly well adapted for grain growing. The timber on section 33 and the northwest quarter of section 34 is suitable for lumber, but in general the timber to be found is mainly suitable for fuel, &c.—*Geo. Ross, D.L.S., 1907.*



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 22—Continued.*

53. The southeastern part of this township is rather low and swampy, and also broken by small lakes, surrounded with green spruce or tamarack, varying from three to six inches in diameter, but there is also a good deal of brulé to be met with. The southwestern portion of the township is occupied by the northerly end of the high ridge or divide lying between McLeod and Athabaska rivers. Section 4 on this divide is heavily timbered with spruce and jackpine from six to thirty inches in diameter and scattered poplar from ten to eighteen inches in diameter. About the north end of section 4, the timber is mainly spruce from eight to twenty-four inches and scattered poplar up to eighteen inches in diameter. In going northerly from the north boundary of section 4, the land slopes downward for the distance of about sixty chains, where a ravine fifty or sixty feet in depth, and heavily timbered with spruce and jackpine up to three feet in diameter is reached. In the bottom of this ravine a stream about two feet wide and fifteen inches deep runs easterly with a rapid current. From the top of the bank on the north side of this ravine the land has a gentle slope downwards towards the north and is timbered with spruce, jackpine and poplar from twelve to thirty inches in diameter, and about a mile north of the ravine another stream about two feet wide and eighteen inches deep runs northeasterly with a rapid current. Going north from this creek the land still slopes downward and the timber is smaller running into spruce about six inches in diameter. Here the survey lines of the Grand Trunk Pacific railway are met with, as they curve around to the north, to avoid the heavy grade that would be necessary, if the direct route across the divide were taken. Another creek about three feet wide and one foot deep, flowing northerly with a rapid current, is met with in the smaller spruce. Sections 5 and 6 are covered with heavy dry standing timber and section 6 and the west half of section 5 are on the westerly side of the divide, and slope northwesterly towards Athabaska river. North of sections 5 and 6, the land is brulé, and descends towards the Athabaska for the distance of about a mile, then gradually rises into a high ridge, which is timbered with spruce and jackpine of medium size. Athabaska river runs through the northwestern part of the township in a wide and deep valley. The soil in this township is light sandy loam interspersed with areas of yellow silty clay, and would be fairly well adapted for agricultural purposes. On the south central portion of the township as previously referred to there is a considerable area of timber suitable for lumbering purposes.—*Geo. Ross, D.L.S., 1907.*

52. Athabaska river flows through the northwestern corner of this township in a deep valley in which the bottom is rather narrow and confined, being wooded or brulé rather than hay flats, however on the northwesterly side of the river, both in the valley and on the plateau above, there is a considerable stretch of brulé, in which there is a good growth of grass. This portion of the township, on the northwestern side of the river is principally light brulé, with second growth poplar, and scattered small areas of medium sized spruce and jackpine, and is mainly high dry land ascending towards the west, and is broken by the deep valley of a creek running southeasterly into Athabaska river. All the central part of this township on the southeasterly side of Athabaska river slopes northwesterly towards the river, and forms the southeasterly side of its valley. In the vicinity of the river on this slope are considerable areas of live spruce and jackpine, but fire has made many inroads into the timber, leaving lanes and patches of brulé with a large amount of fallen timber. Back of the live timber farther up the slope of the valley the central portion of the township is mainly heavy brulé. The southeastern part of the township is on the top of the divide between McLeod and Athabaska rivers and is brulé with interspersed small areas of live spruce and jackpine. The soil in this township is light



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 22—Continued.*

sandy loam, and interspersed areas with yellow sandy clay, or gravelly soil. The surface is well watered with many small and medium sized creeks and when cleared should make good agricultural or grazing lands.—*Geo. Ross, D.L.S., 1907.*

53. Athabaska river flows northeasterly through this township and cuts off its southeast corner in the form of a triangle, having its south and east sides each about four miles in length. The whole of this triangle, except minor undulations, slopes northwesterly towards the river and forms part of the bank of its valley. The greater part of this triangle is *brulé* with a large amount of standing dead timber, but near the river, in the southern part of the township, there is a tract about two miles long and half a mile wide, wooded with poplar, spruce and jackpine from six to twelve inches in diameter. The northerly loop of the Yellowhead pass trail, which comes around by the northerly end of the high divide between McLeod and Athabaska rivers passes through this woods. A medium sized creek, flowing in a deep valley, cuts into the southwest corner of this township and a short distance north of this valley, the easterly side of a high hill or ridge projects into this township from the west, and its top, which rises to the height of one thousand feet above Athabaska river, is very light *brulé*, or nearly open prairie. The northwesterly part of the township is high rolling, and broken by a number of high ridges, partly wooded with spruce and partly very light *brulé*. Soil in this township is mainly light sandy loam, but there are tracts of clay with a stony or gravelly subsoil. Some portions of this township are rather rough and high rolling, but large parts of it when cleared will make good agricultural or grazing lands, and the township is well watered throughout, with many small and medium sized creeks. The timber is suitable only for meeting the ordinary requirements of settlers. Athabaska river in this township averages about five hundred feet in width.—*Geo. Ross, D.L.S., 1907.*

*Range 24.*

51. Athabaska river flows northeasterly through the northwest corner of this township, and the Yellowhead pass trail runs through it, parallel to the river, keeping about half or three-quarters of a mile southeast from it. In the vicinity of the trail there is a fine stretch of prairie bottom land, with good grass, the soil being a rich brown loam. Between this strip of prairie land and the river, is a belt of second growth jackpine, and the northwesterly side of the river rising with a fairly steep, but gradual ascent, is also clothed with second growth jackpine. On the southeasterly side of the river, the bank of the valley rises to a high plateau, with light *brulé*, nearly open in many places, but generally with scattered poplar and jackpine. The valley on the southeasterly side of the river is a desirable location for homesteading, being well adapted to grain growing or mixed farming and the township as a whole will no doubt prove to be well adapted for these purposes. The survey line of the Grand Trunk Pacific railway runs through the township not far from the Yellowhead pass trail.—*Geo. Ross, D.L.S., 1907.*

52. Athabaska river flows northeasterly through the southeasterly part of this township, but there is little or no bottom or grazing land in its valley on either side of the river in this township. The northern part of the township is mainly heavy rolling land with a general ascent to the west, away from the river, and continues to rise, till near the northeast corner of section 31, where the top of the plateau or 'mountain' is reached, it attains an elevation of 4850 feet, or about 1750 feet above Athabaska river. The greater part of this township is more or less rolling and covered with *brulé*, having scattered areas of second growth poplar, or groves of medium sized



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 24—Continued.*

spruce, but in the northwest corner of the township on the top of the plateau or 'mountain' is a heavy growth of spruce from six to twenty-two inches in diameter. In this township the comparatively level plateau or 'mountain' extends only about twenty or thirty chains south of the north boundary of section 31, and then slopes southerly down to the valley of the Athabaska. On the shoulders of this slope is a good deal of medium sized spruce and jackpine. The soil varies from sandy loam in certain portions of the township to yellow clay in others, and the greater portion of the township will no doubt be found to be fairly well adapted for grain growing or mixed farming. The timber generally is fit only for the ordinary purposes of settlers except at the northwest corner of the township where it is suitable for lumber.—*Geo. Ross, D.L.S., 1907.*

53. A creek about fourteen feet wide and seven inches deep flows through the southeasterly part of this township in a wide valley, about a hundred feet deep on its way to join Athabaska river. Immediately north of the valley of this creek in section 1, the land rises into a high hill, which attains an elevation of about four thousand one hundred feet or about one thousand feet above Athabaska river in its vicinity. The top of this hill is very light brulé or nearly open prairie. Sections 1, 2, 3, 4 and 5 in this township are principally rolling and ascending land, brulé with a few areas of poplar and spruce, but towards the west side of the south boundary of section 5 at the top of a steep ascent, a heavy spruce wood is entered, and the easterly slope of this ascent sweeps northerly and easterly in a crescent form and circles back easterly to the shoulders of the high hill rising in section 1, striking it about two miles north of the south boundary of the township. The top and southerly slope of this hill, which thus extends in crescent form from west to east are clothed throughout with a heavy growth of spruce from six to twenty-two inches in diameter. This heavily timbered land stretches to the north forming an area that is suitable for lumbering operations. The brulé and more open parts of the township will no doubt prove to be well adapted for ordinary agricultural purposes. The soil varies from light sandy loam in places, to clay that is more or less stony in other parts of the township.—*Geo. Ross, D.L.S., 1907.*

*Range 25.*

30. This township is traversed by Columbia river. It is mostly mountain side and high bench land, timbered with fir. There is an extensive flat off the west side of Columbia river below the mouth of Beaver river, timbered along the river with spruce.—*Jos. E. Ross, D.L.S., 1907.*

31. Columbia river traverses the westerly half of this township. It is mostly mountain side with high benches. There are some flats along the river timbered with spruce.—*Jos. E. Ross, D.L.S., 1907.*

51. Athabaska river flows northeasterly through this township, dividing it into two nearly equal parts. All the central part of the township is occupied by the valley of this river, in which there is a large amount of nearly open land, with a good growth of grass, and well adapted for grazing. The river here is about four hundred feet wide, and runs with a rapid current in a rocky bed. The banks between the river and the first flats of its valley vary in height from four or five feet to fifty or sixty feet. On the northwesterly side of the river, and back from it about a mile and a half or two miles, the valley has in places rocky banks about forty or fifty feet high. The northwesterly part of the township is rolling land, mainly brulé with poplar brush and some areas of small spruce. In the vicinity of Prairie creek on the southeasterly side



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 25—Continued.*

of the river the first flat adjoining the river is about six to eight feet above it being a stretch of nearly open prairie, about fifteen or twenty chains wide, then after ascending a bank about forty feet high, one reaches the second flat a wide tract of comparatively open land, very light brulé, with some scattered poplar brush. All the south-east part of this township is somewhat similar to this tract, the soil being a rich dark brown loam well adapted for grain growing or grazing. Some good seams of coal are also found in this portion of the township, which is traversed by the Yellowhead pass trail, and the surveyed lines, of the Grand Trunk Pacific railway are also run through it.—*Geo. Ross, D.L.S., 1907.*

52. The northern part of this township forms part of a high and heavily wooded plateau, or 'mountain' which extends westerly to Whitefish lake, in the western part of range 26. On this high plateau, sections 35 and 36 are covered with a heavy growth of spruce from eight to twenty-two inches in diameter, mixed with balsam from eight to twelve inches in diameter. Sections 33 and 34 also on this high elevation of land, are less heavily wooded with spruce and jackpine from six to eighteen inches in diameter. Sections 31 and 32, also on the 'mountain' are wooded with spruce from five to fifteen inches in diameter, but in sections 31, 32 and 33, there are several areas of partially open land, with a fair growth of grass. These sections are also well watered by several creeks from one to two feet wide and by one or two wider creeks up to twelve feet in width. The creeks in general run in stony beds with a fairly rapid current, in a northerly or northeasterly direction. The heavy woodland in the northern part of this township appears to have not been injured by fire for at least two hundred and fifty years, as many of the spruce trees have reached that age and growth rings counted on some of the balsam show that they were over two hundred years old. A few ponds, and open grass marshes, from one to twenty acres in extent are met with in the northern part of this township. The southern part of the township is mainly brulé, and has a general southerly descent towards Athabaska river. The soil in the northern part of the township where the land is well timbered, is mainly clay subsoil, under a fair depth of black loam, and would be well adapted for grain growing. The timber on the northeastern part of the township is suitable for lumber. On the remaining part of the township, the timber would only be suitable for fuel, fencing, &c. or the ordinary uses to which settlers would put medium sized trees.—*Geo. Ross, D.L.S., 1907.*

53. Sections 1 and 2 are heavily timbered with spruce from eight to twenty-two inches in diameter, sections 3 and 4, are timbered with spruce and jackpine from six to eighteen inches in diameter, and sections 5 and 6 have a fairly thick growth of spruce from five to fifteen inches in diameter, but on sections 4, 5 and 6 there are a few areas of limited size which are comparatively open and have a fair growth of grass. The southern portion of the township as described, is also well watered by many small and medium sized creeks flowing in a north, or northeasterly direction. The northern part of the township was not explored by me but it appears to have a general rolling descent to the northeast, and to be wooded with medium sized spruce. The soil is mainly clay, under black loam, and the surface being rolling, the greater portion of it when cleared would be very suitable for the ordinary purposes of agriculture. The timber on the eastern or southeastern part of the township is suitable for being manufactured into lumber, and on the remaining portion of the township it is valuable for fuel, or for meeting the ordinary requirements of the settlers.—*Geo. Ross, D.L.S., 1907.*



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 26.*

31. Columbia river traverses the northeast corner of this township. The country is mountainous. Along the river there are some small flats timbered with spruce of from ten to twenty inches in diameter—*Jos. E. Ross, D.L.S., 1907.*

32. This township is traversed by the Columbia river. There are at the mouths of Bush and Gold creeks which flow into the Columbia from opposite sides, large flats marshy towards the middle and mostly timbered with spruce along the river. On the east side of Surprise rapids there is some low hilly land with high mountains in the rear. The river is winding with crescent and back channels forming small islands.—*Jos. E. Ross, D.L.S., 1907.*

52. Whitefish lake, a beautiful sheet of fresh water about twenty-five chains wide, stretches north and south through the central part of sections 29 and 32, and also extends northerly into township 53, in this range. A creek varying from ten to twenty feet in width and from one to five feet in depth, flows northerly, through a valley with bottom lands, about half or three-quarters of a mile wide into the south end of Whitefish lake. At several points in this valley the creek broadens out into small lakes or ponds. The bottom land along the creek is mainly open meadow, with a good growth of grass and peavine but it also contains patches of scrub and groves of poplar and young jackpine. On the east side of Whitefish lake is a valley about twenty chains wide, *brulé* more or less open and broken by gravelly ridges and on the east side of this valley is a cliff, or terrace of sandstone about one hundred and twenty-five feet high. The cliff extends south of the southerly limit of Whitefish lake along the easterly bank of the valley of the creek formerly mentioned for a distance of about two or three miles. From the top of the sandstone cliff east of Whitefish lake the land ascends to the east into a high plateau or 'mountain' attaining an elevation of about one thousand feet higher than the lake. The 'mountain' extends east occupying the northeastern part of this township as well as the portions of ranges 25 and 24 previously referred to. The greater part of the plateau in this township is heavy *brulé* with scattered areas of spruce except in section 36, on which there is a fairly thick growth of spruce from three to fifteen inches in diameter. The southern portion of the township below this 'mountain' is rolling land being mainly *brulé* with young poplar, and interspersed with areas of small spruce. The part of the township west of the valley running south from Whitefish lake is inclined to be hilly, and is covered with *brulé*, and intermingled areas of medium sized spruce. Immediately west of Whitefish lake, in sections 31 and 32, there is a considerable tract of very light *brulé*, or almost open prairie, but the soil is rather gravelly to make good agricultural land. The central portion of section 31 is occupied by a fine dry open hay meadow about one hundred acres in extent. The northern portion of Whitefish lake is quite shallow, but it is not marshy, and the southern part of the lake is in general very deep. This lake contains great quantities of large whitefish and pike, and several families of beaver apparently flourish here. The Smoky river trail, running northwesterly from Prairie creek to Smoky river, crosses the southwestern part of this township, runs northerly through the valley extending south from Whitefish lake, passes along the west side of the southern part of that lake and then turns northwesterly. This trail is in fair condition, but it is not much travelled. Considerable areas of this township are quite desirable for settlement, being well adapted for agricultural purposes, the soil being clay or clay loam underlying a few inches of black loam, but light sandy loam and gravelly areas are quite numerous. The valley running south from Whitefish lake, though rather confined in area, is probably the most desirable location in the township.—*Geo. Ross, D.L.S., 1907.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 26—Continued.*

53. This township is mainly brulé, with occasional areas of young spruce, jack-pine and poplar. The surface is heavy rolling and consists mainly of a series of high ridges with intervening deep valleys. Whitefish lake extends northerly, from township 52, into section 5, for about three-quarters of a mile. This northern portion of the lake is quite shallow, a good deal of it being only two or three feet deep, but not marshy, although in other parts of the lake, the depth is quite great. A creek varying in width from about forty to one hundred feet, and about three feet in depth flows northerly out of the north end of the lake with a slow current. Along this creek, are low flats, about twenty chains wide, having a growth of short wiry grass. In this flat, the creek enlarges into an occasional pond, but about half a mile below the point at which it issues from the lake, it is well confined to its banks. Immediately west of the creek flats, there is a second flat, which is about twenty feet above the creek, being nearly open prairie and about twenty chains wide, west of this is a similar flat about twenty feet higher, and west of that again a hill, or ridge rises to the height of about one hundred and fifty feet above the creek. On the east side of the flats of the creek the sandstone cliff or terrace which extends northerly from township 52, rises to the height of about three hundred feet above the lake. About two and a half miles below the point at which it leaves the lake, the creek narrows down to a width of about fifteen or twenty feet, and runs with a rapid current, over a stony bed. This creek trends in a northeasterly direction and flows through a deep valley, having the sandstone cliff on the east side and a high steep clay or gravelly bank on the west side of its valley. The land in the vicinity of the creek is brulé with scattered groves, or clumps of second growth spruce and jackpine. In this township, the soil, on the ridges is sandy or gravelly loam and in the lower or bottom lands between the ridges it is black muck or black loam. In these bottom lands there are also considerable areas with a good growth of grass. The land generally is well watered with many small streams, and large areas when cleared would be better adapted for grazing lands, than for grain growing.—*Geo. Ross, D.L.S., 1907.*

*Range 27*

52. The surface of this township is in general, high rolling or hilly and the greater portion of it is brulé with scattered areas of spruce. It is well watered with many small creeks, and Hay river, a fine stream of pure water about fifty or sixty feet wide, and from two to five feet deep flows with a rapid current through the northwest part of the township. In the bottom of the valley of this river are groves of poplar, cottonwood and spruce from six to fifteen inches in diameter. The slopes of the valley are covered with brulé and scattered areas of medium sized spruce. The Smoky river trail runs through the northeastern part of the township, and it is in fair condition, but there is very little travel on it. The older trails as shown on previous departmental maps, are now apparently obliterated. The soil is mainly light sandy loam, but there are considerable areas with clay loam and stony clay. At the northeast corner of the township there is a tract of good agricultural land, but on the whole the township is not well adapted for settlement.—*Geo. Ross, D.L.S., 1907.*

53. This township is mainly brulé interspersed with a few areas of medium sized spruce and jackpine, and consists of a series of high ridges, and deep valleys. Hay river flows diagonally through the southeast part of the township in a wide and deep valley, in which there are some bottom lands with good grass, and Smoky river trail runs northwesterly through the southwestern part of the township. This township is not well adapted for settlement, being on the whole rather rough, and high



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## TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

*Range 27—Continued.*

rolling with the exception of two or three sections at the southeast corner. The soil is mainly sandy loam. Fractional township 52 and 53 in range 28 are mainly *brulé* and rather too high rolling and broken to be of much value for settlement.—*Geo. Ross, D.L.S., 1907.*

## TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

*Range 2.*

23. (*Section 21.*) The section can be reached by a rough wagon road running southerly from the sawmill at the 'big eddy' of Columbia river, on the main line of the Canadian Pacific railway. The northeast quarter of the section is rocky, and rising towards the west. It has a light covering of earth, generally stony. A growth of hazel, willow and poplar scrub with a few second-growth white pine covers the ground. The north half of the southeast quarter is similar to the northeast quarter. The south half has a southerly slope. While broken with rocky ridges there is a considerable area of sand and gravelly soil that would probably make good fruit land, but in dry seasons lack of moisture would be a drawback, as owing to the roughness of the surface and its elevation it is impossible to irrigate it. Second-growth white pine trees are scattered over the quarter section and if not injured by fire they will when mature be valuable. They are from five to nine inches on the stump. The north and east halves of the northwest quarter are rocky with a light covering of soil, light scrub and second-growth pine. The southeast quarter is broken with rocky ridges. Between the ridges there are areas of flat land, generally marshy, with clear spaces that when drained will be ready for cultivation. The remainder is covered with a thick growth of scrub and fallen timber, the result of fire. A few cedar and hemlock trees of small size growing in clumps will furnish considerable firewood. There is no land producing hay, other than a space of about five acres that has been sown in timothy by the former settler mentioned herein. Springs of fresh water that are probably permanent will provide water for domestic purposes. The flat land is covered with water in the spring but clearing and a simple system of drains will prevent flooding. There are no water-powers. The climate is equable, being similar to that of Revelstoke. There is deep snow from December to the end of March, or later. Rainfall is generally sufficient without irrigation. I do not think summer frosts prevail. Rock exposures are broken up and are not suitable for structural purposes. There are no veins of coal or lignite, or minerals of economic value so far as known. Bear and grouse are plentiful. The remains of two cabins and a small clearing show that the place has been occupied at one time, but the improvements are now in ruins, and it has evidently been abandoned for some time.—*J. A. Kirk, D.L.S., 1907.*

*Range 3.*

77. Two-thirds of this township is thickly timbered with spruce, jackpine, poplar, birch and large willow, being on the Birch hills. There are a few creeks coming out of those hills running until the middle of summer. The surface on section 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 in that township is prairie and bluffs. The soil is very good, and game such as bears and moose are plentiful in that part of the country. Twenty or thirty settlers could locate in the south portion of that township when subdivided. This township can be reached by Egg lake wagon trail.—*J. B. Saint Cyr, D.L.S., 1907.*

78. This township can be reached by the Egg lake and Spirit river wagon trail. With the exception of sections 1, 2, 3, 4, 5 and 6, where patches of prairie are met



SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

*Range 3—Continued.*

with, this township is thickly timbered with poplar, spruce and large willow. The country north of the wagon trail is level and the surface soil is very thin, overlying a clay and hard subsoil. On sections 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 spruce suitable for lumbering purposes is plentiful. Brulé river, running in a deep ravine, crosses this township about three miles southeast of the northwest corner of section 31. There are no water-powers nor stone quarries, and water outside of Brulé river is rather scarce. Bear and moose seem to be plentiful in that district. Oxide of iron has been found in the cutbanks along the river at different places and principally in the neighbourhood of the mouth of Spirit river. Hay is not very plentiful in this township and can be procured in some sloughs towards the northeast corner of section 36. The northeast portion of this township is rolling, and the land adjoining Brulé river is very hilly. A few settlers could find enough open land in the first row of sections in the south of this township to make a good farm. The climate is the same as at Spirit river and early summer frosts are not very frequent.—*J. B. Saint Cyr, D.L.S., 1907.*

79. This township lying south of Peace river is all thickly timbered with poplar, large willow and spruce. The soil is comparatively poor. Brulé and Spirit rivers cross this township through its south portion. The hills of Brulé river are from three hundred to four feet in height and those of Spirit River are about two hundred feet high. There is no way of reaching this township at present unless by Peace river, but even by this way a road would have to be made to go up the hills.—*J. B. Saint Cyr, D.L.S., 1907.*

80. The surface in this township is prairie and bluffs. The soil is good. Wood for fuel is plentiful and timber for building purposes can be procured almost everywhere in this township. There are a few creeks there flowing to Peace river nearly all summer. This township can be reached by Peace River Landing and Dunvegan wagon road. Settlers will find there good locations when the subdivision of this township is made.—*J. B. Saint Cyr, D.L.S., 1907.*

*Range 4.*

80. The western half of this township is thickly timbered with poplar, spruce and large willow, while the remaining portion is prairie and bluffs. Very little of this township is surveyed. The soil appears to be fairly good. The country in the western portion of this township is hilly and rolling. The eastern half is nearly level. There are a few good sections here and there. The climate is very good all through that country and early summer frosts are not very frequent.—*J. B. Saint Cyr, D.L.S., 1907.*

*Range 6.*

19. A part of Shuswap river was traversed to complete a former survey. There is little level land along the river fit for settlement. While a good deal of it is gravelly and stony, there are some patches of good land.—*Jos. E. Ross, D.L.S., 1907.*

71. This township can be reached by Spirit river and Dunvegan wagon road. As in township 72 the country is undulating and the soil is a deep black loam or a deep black sandy loam resting on a clay or sandy clay subsoil. The surface in that portion of the township surveyed is prairie and bluffs. Lake No. 2 situated on east boundary of section 36 is very small. Bear creek crosses this township from section 33 to section 11. The supply of water furnished by the lakes and streams of this



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## TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

*Range 6—Continued.*

township is permanent but the best water of all is found in Bear creek. There are no water-powers and no stone quarries in this township. No mineral of any description has been found there during the progress of the work. Hay can be procured in good quantities all through this township. Wood for fuel is plentiful and timber for building purposes can be procured along Bear creek and towards the southeast portion of this township. Ducks and geese are plentiful in the spring and autumn on the lakes of this township. The climate is very good all through Grande prairie. Last summer there were two frosts in August, but the people of the place say that generally there are no early frosts in the summer. Grain and vegetables are successfully raised on Grande prairie. Flyingshot Lake settlement is included in this township. This settlement comprises sections 9 and 16 with eastern halves of sections 8 and 17 and western halves of sections 10 and 15, nearly two miles square. In the middle of this settlement is a small lake called Flyingshot lake. The survey of this settlement commenced on August 2 and was completed on the 20th. The surface is bluffs and prairie and the soil is composed of a deep black loam resting on a sandy clay subsoil. About three-quarters of the surface covered by the settlement is thickly timbered with poplar and large willow with a few spruce here and there. A small quantity of hay is cut around Flyingshot lake. Potatoes are raised successfully every year in that settlement and this summer small fields of oats were looking very fine. Flyingshot lake is very shallow and its water is not very good. Wood for fuel is plentiful in the settlement. There are no water-powers, and no mineral of any description has been found there. As in Spirit River and all through the west, two frosts were felt also at Flyingshot Lake settlement, but the people of the place say that the frost comes always later than that. The supply of water is permanent and more than sufficient for the needs of the settlement. Ducks and geese are plentiful in the spring and autumn around the lake. The climate is good and the autumn is generally long and fine. The country around the lake is undulating and rolling. There are no stone quarries. Most of the hay is cut outside of the settlement. The people of Flyingshot Lake settlement communicate with Saskatoon lake, Bear creek and Spirit river by two fairly good wagon roads in the prairie country, but through the timber between Grande prairie and Spirit river the road is in a very bad condition. These will improve with time for I was told in the fall that the government had men opening a new road on a better location. Flyingshot Lake settlement is in a low place and mostly surrounded with timber. The country is much nicer north of the settlement and near Bear creek.—*J. B. Saint Cyr, D.L.S., 1907.*

72. This township can be reached by Spirit river and Dunvegan wagon road which crosses this township from section 36 to section 1. The country is undulating and the surface is prairie and bluffs. The soil is a deep black loam resting on a clay or sandy clay subsoil. Hay is plentiful, a large quantity can be procured around Clairmont lake on the east boundary of this township and around Fergusson lake on sections 27 and 22. There is also a large hay slough or marsh on sections 20, 21, 28 and 29, and hay can be procured in good quantity near lake No. 1 and on section 19. Bear creek crosses sections 19, 20, 17, 8, 9, 4 and 3. Spruce creek which empties into Bear creek on section 19, coming from the north is a good-sized creek. The water in the lakes and streams of this township is permanent and good. Wood for fuel is plentiful. There are no water-powers, and no mineral of any description has been found in this township. There are no stone quarries. Ducks and geese abound in the spring and autumn in the lakes and streams of this township. This summer Grande prairie had a fine appearance; better grazing land cannot be seen anywhere else. Settlers will find there everything to meet their requirements. Frosts were felt here last summer also, but generally there are no early summer frosts. The climate is



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

*Range 6.—Continued.*

very good and grain and vegetables are raised with success by the few scattered settlers of Grande prairie.—*J. B. Saint Cyr, D.L.S., 1907.*

78. (*Spirit River settlement.*) The survey of this settlement commenced on May 17, 1907 and was completed on June 19. Spirit river, which is a very small stream crosses the settlement from west to east. The soil is of good quality being composed of a black loam resting on a sandy clay subsoil. The surface is prairie and bluffs. The country is level with the exception of that portion of the settlement situated south of Spirit river. Wheat, oats and vegetables are successfully raised there, since a few years. The prairie furnishes a good pasture. The people here, cut their hay mostly outside of the settlement. Wood for fuel is plentiful. There is no water-power and no mineral of any kind has been found during the progress of the survey. The settlement comprises fifty-nine lots of different sizes. Nearly all the lots bordering on Spirit river are occupied by squatters. There are three good bridges on Spirit river, one on lot 16, one on lot 12 A and one on lot 9. The water supplied by Spirit river is not permanent. The river flows between two high banks, varying from fifteen to forty feet in height. The water is fairly good in the spring but towards the fall it is alkaline, owing to the alkaline springs coming out of the banks in different places. The climate is good with generally no early frosts, but last summer, in August, there were two frosts which injured the grain a little; these have been felt all over the west, I believe, and I was told also that the frost comes generally later than that. The country around Spirit river has a fine appearance. Every traveller that came there last summer appears to like the country and to have great faith in the future of that district. I never witnessed such fine weather as we had until late last fall. Some of the residents of the place are making arrangements with firms in Edmonton to procure a sawmill and boring outfit to reach water; the only drawback of that country during the dry years. Mr. James Brooks and others say that they will certainly find good water at a comparatively small depth. The boring will begin next spring. From this settlement there is a wagon road going to Grande prairie, and one to Dunvegan and Peace River Landing. There are no stone quarries. Game is not so plentiful as it used to be around here. Between Spirit river and Dunvegan lies a tract of very good land. It is undulating and rolling in some places.—*J. B. Saint Cyr, D.L.S., 1907.*

*Range 7.*

19. There is a little level land along Shuswap river fit for settlement.—*Jos. E. Ross, D.L.S., 1907.*

*Range 8.*

18. The section (6) surveyed is mostly steep rocky sidehill partly timbered and partly covered with brush. It is not fit for agricultural purposes.—*Jos. E. Ross, D.L.S., 1907.*

*Range 9.*

17. Only a small strip of land adjoining the provincial lots in sections 24 and 25 is fit for agriculture. The timber has been burnt off. The southeast corner is occupied by a high mountain.—*Jos. E. Ross, D.L.S. 1907* .

18. The part surveyed is rolling hilly ground. Most of the timber has been burnt off and the country is now grown up with brush. It is fairly well watered. The soil is rather light but is suitable for fruit growing.—*Jos. E. Ross, D.L.S., 1907.*



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## TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

*Range 9—Continued.*

19. The part surveyed consists of gently sloping hills having considerable land, nearly level, lying between them. Thick brush now occupies the place where previous to a fire of some twenty years ago heavy timber grew. The land is in general well watered, but the soil is rather light. There are places for a few settlers here.—*Jos. E. Ross, D.L.S., 1907.*

*Range 10.*

17. Most of the land surveyed lies on a small mountain at an elevation above the valley of from five hundred to fifteen hundred feet. It is partly open sidehill. The higher part is rolling and hilly, timbered with small mixed woods. The soil is fairly good but the water is bad and rather scarce.—*Jos. E. Ross, D.L.S., 1907.*

18. There is about a section of good land on the west side of Salmon river. It is low rolling timbered hills with some gradual slopes. A settler has located on section twelve. The west of this section and sections ten and eleven is for the most part sidehills, open timbered range land. All the land in this township fit for settlement is probably surveyed.—*Jos. E. Ross, D.L.S., 1907.*

19. The part surveyed is on the westerly slope of mount Ida. The small amount of agricultural land here would hardly warrant the making of a road. It is well watered and would be suitable for a stock range during the summer. The remaining unsurveyed land in this township is apparently not fit for agricultural purposes.—*Jos. E. Ross, D.L.S., 1907.*

*Range 11.*

17. Section thirty-six is fairly good land but it is pretty heavily timbered.—*Jos. E. Ross, D.L.S., 1907.*

18. The several sections surveyed lie in Warren creek valley. This valley is about half a mile wide, is thickly wooded and almost enclosed by high hills.—*Jos. E. Ross, D.L.S., 1907.*

*Range 12.*

18. There is very little agricultural land, the country being in general hilly, rough and broken. There is a gypsum deposit in the northeast quarter of section ten.—*Jos. E. Ross, D.L.S., 1907.*

*Range 14.*

18. The part surveyed lies around Monte lake. It is hillside with open timber and a few small benches. The quarter sections at the south end of the lake are best suited for farming.

19. The land is at an elevation of at least two thousand feet above the valley. It is a hillside slope thickly wooded with small timber.—*Jos. E. Ross, D.L.S., 1907.*

*Range 15.*

19. This is range land. Three settlers have been located here for several years and have apparently been successful in growing grain.—*Jos. E. Ross, D.L.S., 1907.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

*Range 18.*

20. This township lies immediately west of the town of Kamloops on the main line of the Canadian Pacific railway. Thompson river traverses the township providing an abundant supply of good water. The level bottom lands within the river valley are divided into lots and furnish superior grazing premises. The soil in these lots varies from sand to sandy loam and when irrigated is well suited to the cultivation of fruit and vegetables. Irrigation, however, is very costly. The land also is in danger of being flooded in times of exceptionally high water. To the south the country rises rather abruptly to a height of 1,800 feet above the valley. The hills are very sparsely timbered with fir and bull-pine. The soil is shallow, underlain with rock, and the surface stony with frequent rock exposures. The township is suited only for grazing purposes. Several mining claims have been staked though no mines were in operation at the time of the survey (June). The Iron Mask copper mine in township 19 has been worked to a considerable extent and extensive improvements made on the property. There are no stone quarries and no coal or lignite veins. Water-power could be developed on Thompson river at great expense. Hay is lacking except along the river flats mentioned above. Game is wanting. A limited quantity of fuel is provided by the timber on the southern tier of sections.—A. G. Stacey, D.L.S., 1907.

*Range 19.*

20. This township is traversed by Kamloops lake, the main line of the Canadian Pacific railway and the wagon road from Kamloops to Savonas. On the northeast shore of Kamloops lake, comprised of lots 341, 342 and 343, is some excellent agricultural land irrigated by Tranquille river. With this exception all the country adjacent to the lake on either side is very hilly with frequent rock exposures. There is some scattered pine and fir, though much of the surface is open. These hills are suited only for grazing purposes. Copper has been found within the township and some mining has been done though none was in progress at the time of survey (August). Considerable gold dredging has been done near the mouth of Tranquille river.—A. G. Stacey, D.L.S., 1907.

*Range 20.*

20. This township lies immediately to the south of Kamloops lake and is traversed by the main line of the Canadian Pacific railway and by the wagon road from Kamloops to Savonas. To the south of the lake in sections 13, 24, 25, 26 and 27 is some good bench land. The soil, though gravelly, is very productive when irrigated. In the vicinity of both Duffy and Cherry creeks excellent crops are obtained. At present the remainder of the bench land is used only for grazing purposes, chiefly as a winter range. It is unfortunate that water cannot be readily procured for this land since the character of the climate and the nature of the soil are favourable to the most successful culture of fruit and vegetables. To the west and south the country rises rapidly. The open bench land gives place to high wooded hills timbered chiefly with bull-pine though scattered fir occurs throughout, becoming more plentiful as the altitude increases. The timber averages about fourteen inches in diameter and is of fair quality, though the growth, in places is rather scattered. These hills are free from undergrowth and furnish good grazing lands. Towards the western boundary of the township the valley of Threemile creek furnishes a narrow strip of fine agricultural land in which several good ranches are located. Hay is obtained only by irrigation in the valleys of Cherry, Duffy and Threemile creeks. All the ponds, lakelets and small mountain streams seem to be alkaline though the water in Cherry,



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## TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

*Range 20—Continued.*

Duffy and Threemile creeks is of fair quality. There are no water-powers, stone quarries, coal or lignite veins. An abandoned mine near the mouth of Cherry creek was the only indication of mineral seen. Fuel is plentiful. Game is scarce though deer, lynx, bears and cougars are occasionally seen near the southern boundary of the township.—*A. G. Stacey, D.L.S., 1907.*

21. The surface for the most part, covered with sage brush, is extremely rough, with much rock exposures. Bench land suitable for cultivation is confined to two or three very small triangular portions in sections 9 and 18. The hills furnish poor grazing lands. The timber is of very little value being small and very scattered. There are indications of mineral wealth in section 18. Copper is the ore found in greatest abundance in the locality. No hay, game, water-powers, stone quarries, coal or lignite veins were seen. The old government pack trail along the north shore of the lake is now very little used and is in poor state of repair.—*A. G. Stacey, D.L.S., 1907.*

*Range 21.*

19. The provincial wagon road from Savonas, a town on the main line of the Canadian Pacific railway, to the Nicola valley crosses the township providing a splendid means of access. This township lies on a plateau on the divide between Thompson and Nicola rivers. With the exception of the eastern tier of sections the surface is undulating, timbered chiefly with jackpine interspersed with a few spruce and fir. A number of alkaline lakes are located in the central portion of the township. The largest of these are Tunkwa lake and another designated lake A in sections 9 and 16. About the lakes in sections 2, 3, 4, 5, 8, 9, 10, 11, 15, 16, 17, 20 and 21 are a number of open patches, some of considerable extent. The eastern tier of sections is very hilly and heavily timbered with a fair percentage of fir from one to four feet in diameter. The timber however is not very suitable for milling as it branches freely and grows only to a very moderate height. As the creeks are too small to float the material, considerable expense would also be incurred in hauling the timber or lumber to the railway. The township is well watered by the left branch of Threemile creek, numerous tributaries of the right branch in the southeastern part of the township, and Guichon creek in the southwestern portion. Both of these streams have a good flow of splendid water. The soil is a shallow loam and very stony. The country is admirably adapted for grazing. Summer frosts are frequent owing to the high altitude making the cultivation of ordinary vegetables and cereals impossible. There are no stone quarries, no hay meadows and no minerals of economic value, though prospectors have invaded the township in search of copper. There are no water-powers. Ducks and geese are very plentiful on the lakes, attracting a great many sportsmen during the open season.—*A. G. Stacey, D.L.S., 1907.*

21. The portion of this township lying to the south of Kamloops lake is comprised of hilly grazing land bearing considerable sage brush. Some excellent agricultural land is found in lots 367 and 368 near the mouth of Threemile creek where irrigation is possible. The country along the north shore is very rough with considerable rock exposure. The hills are sparsely timbered with fir and pine and suitable only for grazing purposes. In sections 13, 14 and 24 are a number of mineral locations. Copper is the principal ore. These hills seem to be rich in mineral wealth, though no mines are at present being worked. Capital is needed both for the development of the mines and for the erection of a smelter, in the vicinity for treating the ore.—*A. G. Stacey, D.L.S., 1907.*



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

*Range 22.*

16. This township is reached by way of an Indian pack trail leading from the Nicola valley to Mamit lake. The trail here follows the valley of Skuhun creek which crosses the southern part of the township. The country is very rough and hilly reaching an elevation of nearly 7,000 feet above sea level. Sections 5, 6, 7 and 8 are covered with bull-pine and fir. Sections 1, 2, 3, 4, 9, 10, 11 and 12 are covered mostly with jackpine though a few firs are found near the east boundary of the township. In some sections large areas have been fire swept and are now very sparsely covered with small scattered jackpine from two to six inches in diameter. No stone quarries, minerals, coal or lignite veins were seen. Game consists of deer, lynx, bears and grouse.—*A. G. Stacey, D.L.S., 1907.*

20. Sections 35 and 36 are for the most part, open and very hilly, suitable for grazing. The bench land lying between the railway and the river is nearly level and is covered with a heavy growth of sage brush. There is some fire-killed timber along the river bank. The soil appears to be good and would probably if irrigated, prove very productive. Irrigation, however, by means of water from Thompson river would be costly and could be made use of with advantage only by the installation of a large plant serving a much more extensive area.—*A. G. Stacey, D.L.S., 1907.*

*Range 23.*

15. Nicola river, a good wagon road and a newly constructed line of the Canadian Pacific railway crosses this township. Most of the bottom lands in the river valley lie within Indian reserves though three fairly good ranches are located in this township, between the reserves. Skuhun creek crosses the northern part of the township. The valley of this creek is narrow and covered with bull-pine averaging twelve inches in diameter. Small patches along the stream could be cultivated. The surface, however, is stony and the soil a mixture of sand and gravel requiring an abundance of water to render irrigation successful. A settler has located in section 36. The remainder of the township is very rough, hilly and covered with a forest of fir and bull-pine. A wagon road has recently been constructed from the Indian village at the mouth of Skuhun creek to the centre of section 27. No stone quarries, coal or lignite veins were seen. Copper ore has been discovered in section 35. Game consists of deer, coyotes, lynx and grouse.—*A. G. Stacey, D.L.S., 1907.*

16. The junction of Skuhost and Skuhun creeks occurs in section 1 of this township. A settler has located on the southeast quarter of this section and made some small improvements. The section is covered with bull-pine and a few fir. The remainder of the township appears to be very rough and hilly.—*A. G. Stacey, D.L.S., 1907.*

20. This township which lies on a plateau, immediately to the south of Thompson river valley, is reached by a fairly good wagon road from Ashcroft. Barnes creek, a rapid stream of fine fresh water averaging about twenty links in width traverses the township from east to west, entering near the southeast corner and leaving by way of section 19. The surface is hilly with numerous rock exposures in the northern part of the township. Considerable open country is to be found in sections 9, 10, 11, 14, 15, 16, 22, 23, 34, 35 and 36. A splendid ranch irrigated from Barnes creek, is located in section 19. Another ranch in sections 27 and 34, irrigated by means of a small stream flowing north into Separating lake, was unoccupied at the time of survey. Fairly good bull-pine averaging twelve inches in diameter is found in sections 20, 34 and 35. Some large fir is located in sections 15, 21, 22, 25, 26 and 28. A thick forest of smaller fir averaging twelve inches in diameter covers the northern slope of



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## TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

*Range 23—Continued.*

Barnes creek valley in sections 8, 9, 17 and 18. Natural hay meadows are wanting though a few places good meadows could be developed at a moderate expense. The country is most suitable for grazing purposes. A small alkaline lake is situated in section 14 and another in section 22. There is also a chain of small lakes in sections 24, 35, 36, 26 and 25. No minerals, stone quarries, coal or lignite veins were seen. Considerable water-power could be developed in the western part of the township, on Barnes creek. Game consists chiefly of duck and geese, though deer are occasionally seen.—*A. G. Stacey, D.L.S., 1907.*

21. The portion of this township lying to the south of Thompson river is very rough and hilly with the exception of some bench land between the railway and the river in sections 12, 9 and 16, and a very narrow strip in section 6. This land is covered with sage brush and is valueless unless irrigation is employed. The soil is a deep rich clay. Thompson river apparently furnishes the only available source of water supply and irrigation from this source is costly. To the south the country rises continuously, changing gradually from prairie to a forest of pine and fir. The hills provide good grazing lands.—*A. G. Stacey, D.L.S., 1907.*

*Range 24.*

20. Those portions of sections 29, 30, 31 and 32 lying outside of lot 406 and the Indian reserve are very hilly. The surface is prairie and the country suitable for grazing.—*A. G. Stacey, D.L.S., 1907.*

*Range 25.*

17. Thompson river, the main line of the Canadian Pacific railway and the old Yale and Cariboo wagon road cross the southeastern part of this township. Several good ranches are located along the river. Opposite the little town of Spence Bridge extensive apple orchards have been planted from which excellent returns are realized. Sections 14, 15, 22 and 23 are very hilly and with the exception of a few small patches of open country are covered with a forest of bull-pine and fir averaging fourteen inches in diameter. A few acres of improved land lie in the northwest quarter of section 23 and the southwest quarter of section 26. No stone quarries, minerals, coal or lignite veins were seen.—*A. G. Stacey, D.L.S., 1907.*

22. Bonaparte river and government wagon road into the Cariboo country cross this township. The rich bottom lands in the river valley constitute valuable ranching properties. In some places these lands are still covered with a dense growth of poplar, willow, alder and cottonwood. The hills, which are rocky and in some places precipitous, are covered with bull-pine and fir. Between the hills and the bottom lands are stretches of rolling, open country used as summer range lands. The river though rapid is not suitable for power development as the banks here are low and the valley lands too extensive. No stone quarries, coal or lignite veins were seen. Mineral is plentiful in the northern part of the township where prospectors have located a great many claims. Copper is the mineral found in greatest abundance. Game is scarce and consists of coyotes, lynx, deer and grouse.—*A. G. Stacey, D.L.S., 1907.*

23. This township lies on the limit of the railway belt and is traversed by Bonaparte river and by the government wagon road into the Cariboo country to the north. The bottom lands in the river valley are occupied by ranches though some of this property is as yet covered with poplar, alder, willow and cottonwood. The hills on either side are very rough and covered with a forest of fir and bull-pine. A huge



## SESSIONAL PAPER No. 25b

## TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

*Range 25—Continued.*

exposure of limestone formation occurs in section 20. Mineral is plentiful in the southern part of the township. The Maggie copper mine has been developed to a considerable extent though the plant was closed at the time of the survey. Small water-power could be developed on the river near the north boundary of the township. No stone quarries, coal or lignite veins were seen. Coyotes, lynx, deer and grouse are occasionally seen.—*A. G. Stacey, D.L.S., 1907.*

*Range 26.*

19. Valuable meadow lands forming a part of lot 1072 extend southward into section 31 of this township. Southward beyond this lot are situated two or three ranches, beyond which the valley narrows and the rich bottom lands disappear. The remainder of the township is probably very rough and hilly. The upper termination of Hat creek wagon road is in this township.—*A. G. Stacey, D.L.S., 1907.*

20. Some valuable ranching properties are located near the southwest corner of this township where the valley of Hat creek widens considerably. Smaller holdings are found northward along the valley. The hills here are not very pronounced. They are sparsely timbered and are used as summer range lands, for which purpose they are admirably adapted. A good wagon road follows up Hat creek valley through this township.—*A. G. Stacey, D.L.S., 1907.*

21. The land suitable for cultivation in this township lies in the narrow valley of Hat creek and is for the most part, covered by an Indian reserve. The greater portion of the township forms part of a large plateau which appears to be very sparsely timbered. Large open stretches of good grazing land seem to be plentiful. The surveys in this township consisting of only one-half of section line on the east boundary of section 33, observations, concerning the character of the country, were made while journeying to township 19 by way of Hat creek wagon road.—*A. G. Stacey, D.L.S., 1907.*

22. This township is for the most part very hilly. The narrow valley of Hat creek, which crosses the southeastern part of the township and along which a good government wagon road has been constructed, furnishes the only land suitable for cultivation, with the exception of a small area in section 6 and 7. Most of the land in Hat creek valley lies within an Indian reserve and is consequently not cultivated. The hills in the southern part are rough and covered with fir and bull-pine. Some limestone formation occurs in sections 5 and 8. Hat creek averaging about thirty links in width is a rapid stream of fresh water. No stone quarries, minerals, coal or lignite veins were observed. Game is scarce.—*A. G. Stacey, D.L.S., 1907.*

*Range 29.*

2. In this township there is a valley about nine hundred feet above Franser river comprising parts of sections 26 and 27. This land has been overrun by fire and a dense young growth of willow, alder and fir has grown up over it. The hillsides throughout the township have been burned in most places so that there is little large timber left alive, although much dead timber is still standing. In section 22 and in the southwest quarter of section 27 there is some good land in benches suitable for growing fruit. This land is not hard to clear as the fire has made a much cleaner sweep than in section 26 and other parts of section 27. The month of August was very wet this year which even in this district is very unusual. There is a marble quarry in section 21 of this township.—*A. W. Johnson, D.L.S., 1907.*









Roman Catholic Mission at Sturgeon Lake. Photo. by A. Saint Cyr.











Brulé Lake and Bullrush Mountains. Photo. by A. Saint Cyr.



Brulé Lake and Bullrush Mountains. Photo. by A. Saint Cyr.









Roche Miette. Photo. by A. Saint Cyr.

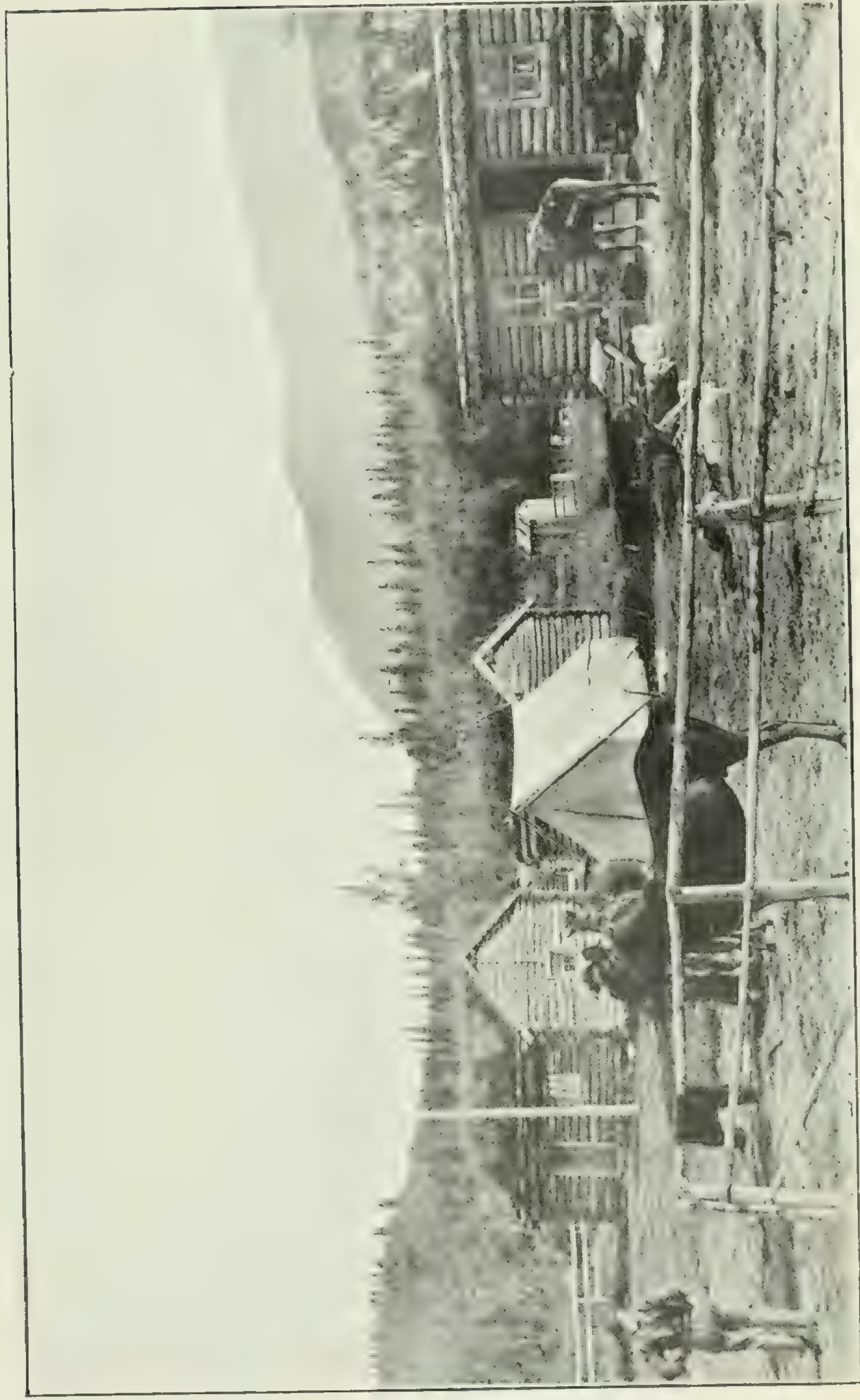


Ford across Athabaska River near Jasper House. Photo. by A. Saint Cyr.







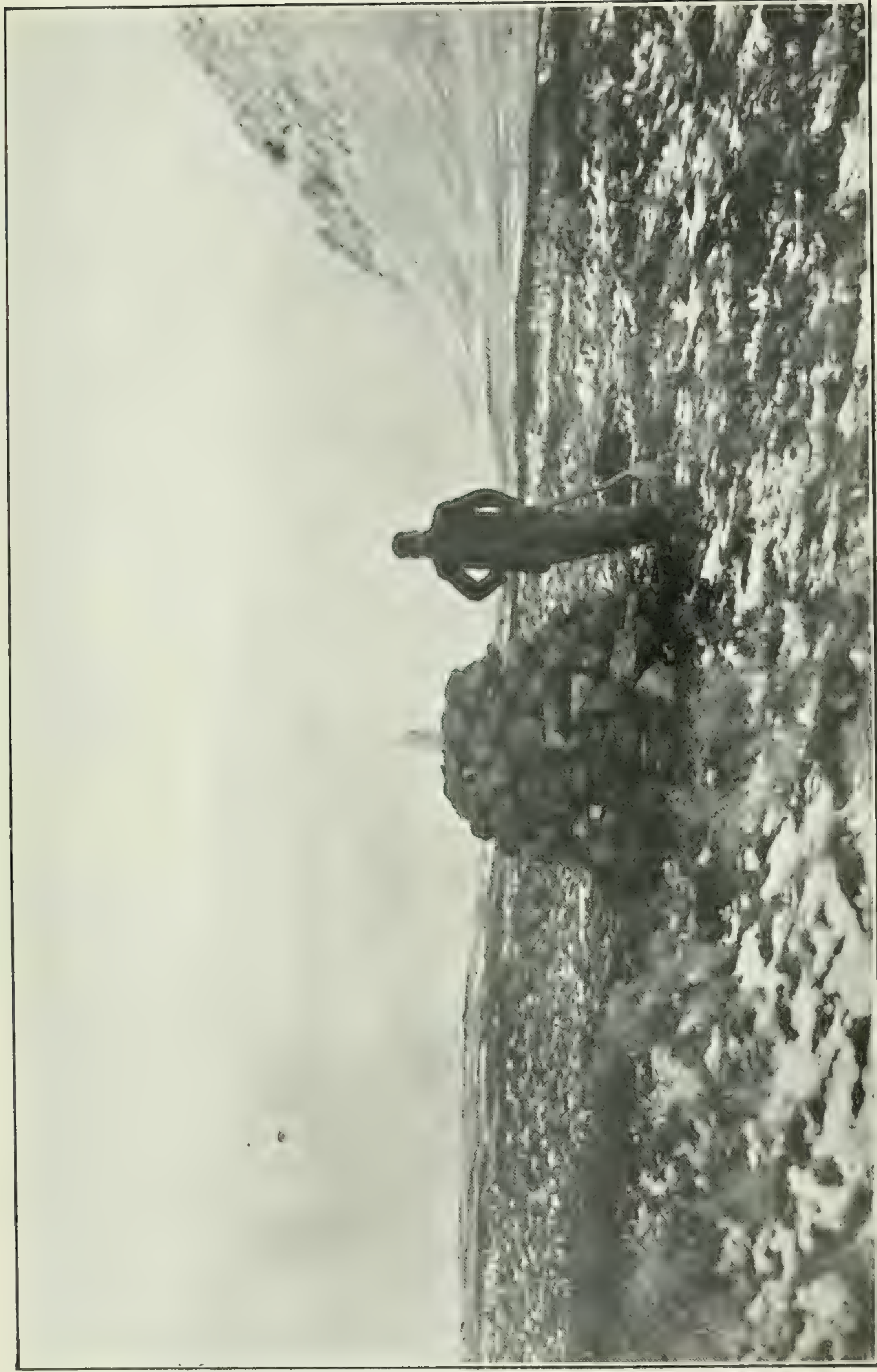


Dutton Post. Photo. by J. N. Wallace.









Stone Mound on the B. C.-Y. T. Boundary. Photo. by J. N. Wallace.









Earth Mound on the B C-Y T Boundary. Photo. by J. N. Waller.







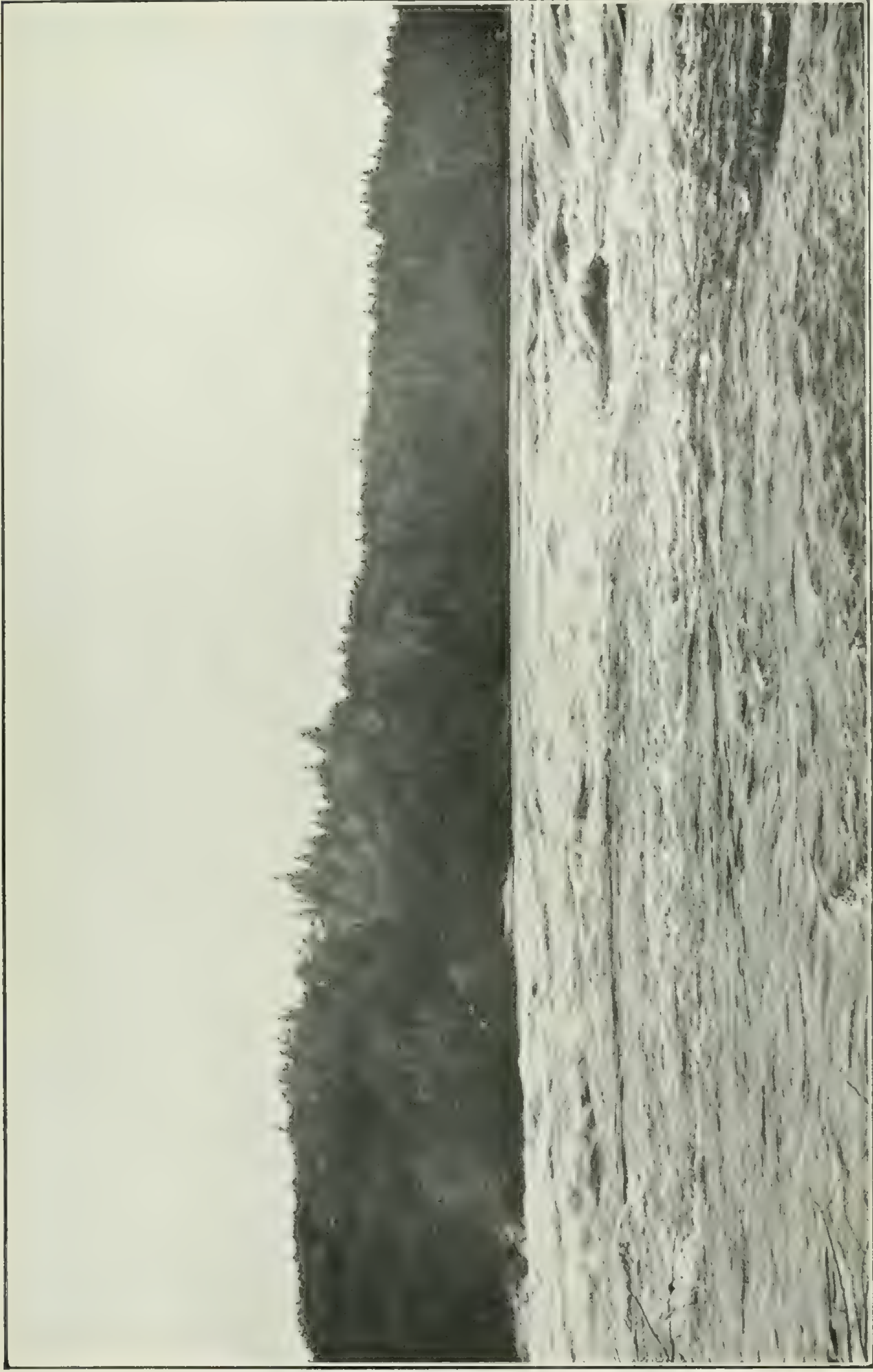


Stone Cairn and Signal on Storm Mountain, B.C. Photo. by P. A. Carson.









First Fall on the Winnipeg River, east of the Manitoba Boundary. Photo, by W. Thibaudeau.







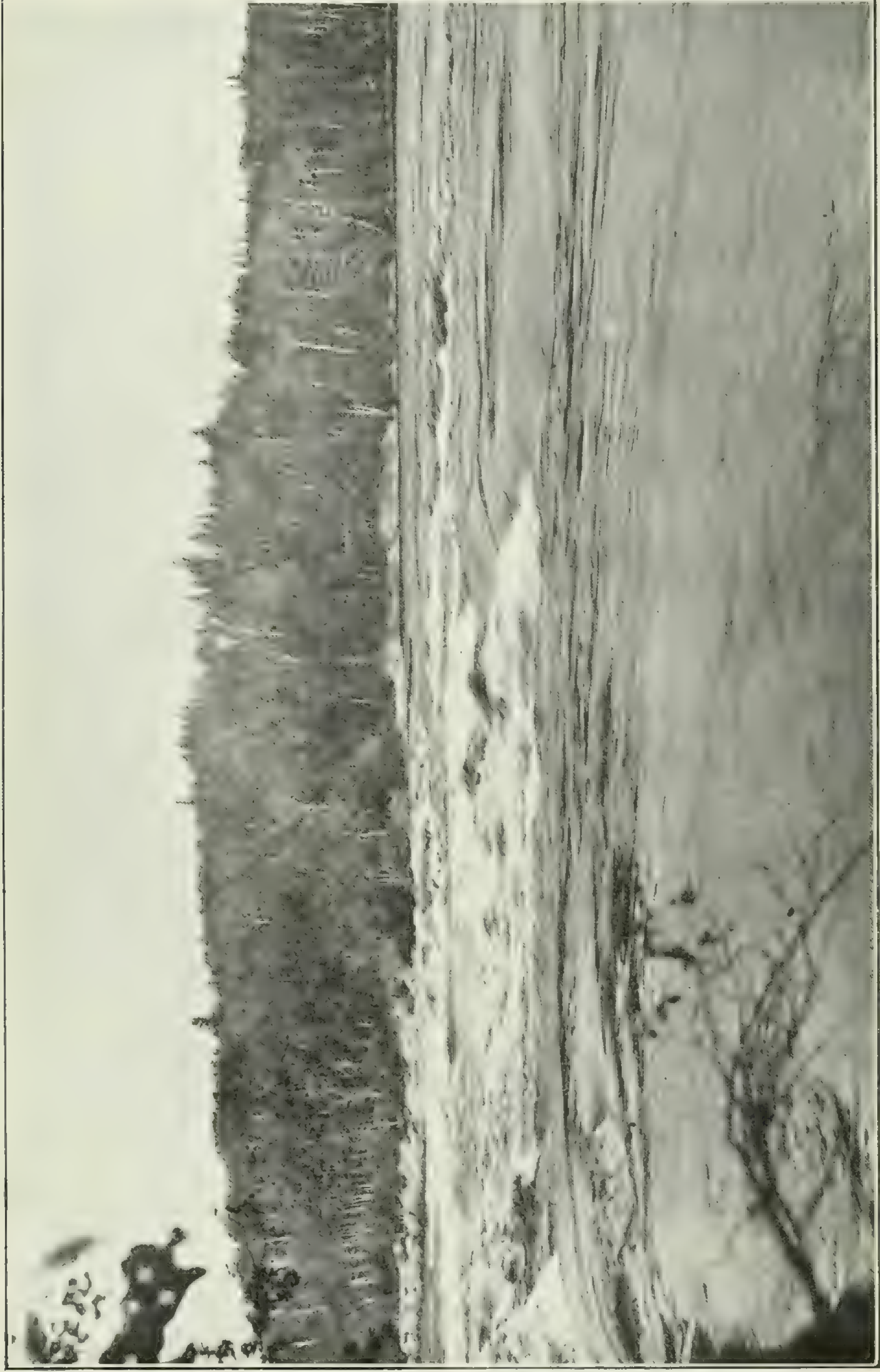


First Fall on English River. Photo, by W. Thibaudan.







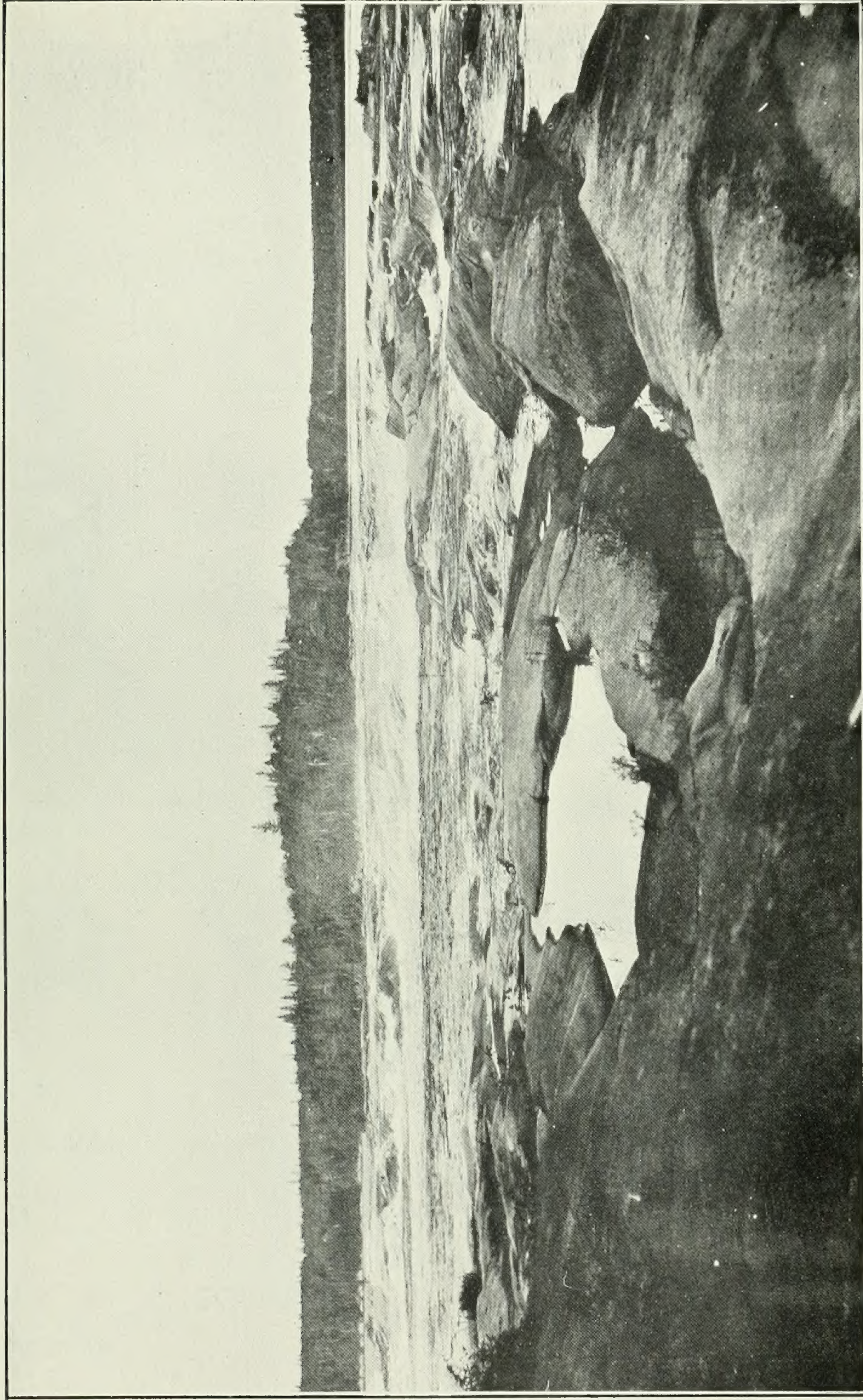


Lamprey Falls. Photo. by W. Thibaudan.









Silver Falls. Photo. by W. Thibaudau.







# SKETCH OF FORD across the ATHABASKA RIVER

3 miles below Jasper House

